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September 2009

Amateur Radio

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WIRELESS INSTITUTE OF AUSTRALIA

Conquering Kosciusko with a Yaesu FT-857D

Getting started on 136 kHz

Part 2 by Drew Diamond VK3XU

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WIA Director Visits RSGB

WIA Director Robert Broomhead had discussions with RSGB President Colin Thomas G3PSM (left) and RSGB CEO Peter Kirby (right) during a recent trip to the UK. Ofcom, the UK licensing authority, is housed in the building at rear.

WICEN Victoria Recognised

On Saturday 18 July 2009 WIA President Michael Owen VK3KI assisted by WIA Director Peter Young VK3MV attended the Annual General Meeting of WICEN (Vic.) Inc., held at the rooms of the Moorabbin and District Amateur Radio Club and presented two President's Commendations that had been announced at the WIA's Annual General Meeting earlier this year.

One Commendation was presented to Peter Weeks VK3YZP in recognition of his work in WICEN over many years and the other was presented to Mark Dods VK3XMU WICEN State Secretary in recognition of the work of WICEN in the Victorian fires and his contribution to WICEN.

Michael Owen VK3KI (left) Peter Young VK3MV (centre) presenting Mark Dods VK3XMU with the award.

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Amateur Radio

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September 2009

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Editorial

Editor: Peter Freeman VK3KAI
editor-armag@wia.org.au

Technical Editor: Peter Gibson VK3AZL

Publications Committee Members

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All circulation matters

nationaloffice@wia.org.au

How to submit material

General and Technical articles

Secretary
AR Publications Committee
PO Box 2042
BAYSWATER VIC 3153
or armag@wia.org.au

Columns and letters to Editor

Editor
AR Magazine
PO Box 273
Churchill Vic 3842
or
editor-armag@wia.org.au

Hamads

'Hamads' Newsletters Unlimited
PO Box 431
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Registered Office

Unit 20 11-13 Havelock Road
BAYSWATER VIC 3153
Australia
Phone: 03 9729 0400
Fax: 03 9729 7325

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Our Cover this month

Working the high point of radio in Australia. Compton VK2HRX on 2 metres, with Taylor VK2FTEC as rotator, operating at 2229 metres altitude from Mt Kosciusko. But they were not alone on a very busy Easter weekend.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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International Amateur Radio Union

Registered Office of the WIA
Unit 20, 11-13 Havelock Road
Bayswater, Victoria, 3153
Tel: (03) 9729 0400 Fax (03) 9729 7325
email: nationaloffice@wia.org.au
http://www.wia.org.au

All mail to
PO Box 2042 BAYSWATER VIC 3153
Business hours: 10am – 4pm weekdays

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Editorial

Peter Freeman VK3KAI

A wild windy day

One benefit of being Editor is that I can submit my editorial quite late in the production process. All things work related are still full on, so I had little inspiration about what I would write for September.

I needed to take a day off work to attend a medical appointment in Melbourne's eastern suburbs. The drive from Churchill started out well, but as I progressed down the highway the wind speed increased. The radio weather reports were warning of very high winds and of various incidents of damage.

After seeing the doctor, I took the opportunity to drop in to the WIA office to pick up some material for PubCom that had arrived by mail and to have a short chat with the staff.

It was time for some lunch and I joined the group that meet weekly at the Knox Club, thanks to a heads up from Robert VK3DN. There was lots of interesting discussion, ranging from radio topics to the joys of following the instructions given by an in-car GPS navigation system. The lunch was much more enjoyable than I would have had if I had not joined them – thanks everyone.

After a couple of shopping stops, I headed home later in the afternoon. The weather was still rather wild, but less fierce than earlier. Apart from the usual traffic issues, the return trip was uneventful.

Given the radio news reports of wind damage, I decided to have a quick look in the back yard as soon as I arrived home, just on dark. In the dull light, I noticed a branch from the neighbour's tree had fallen into my yard, but without causing any damage. My short mast – a six metre length of aluminium fixed at ground level and at the top of the house – obviously had a big enough array mounted on it: the mast had snapped at the top bracing point. Oh well, it was put up over ten years ago as a "temporary" measure when I wanted to become active from home on 2.4 GHz.

On the mast were a mid-sized "grid-pack" dish (ex-Pay TV service) for 2.4 GHz, a 10 element 70 cm Yagi and a 5 element 2 m Yagi, with both Yagis mounted for vertical polarisation. The dish is now far from parabolic, a write-off.

The 70 cm Yagi is now only five elements – the boom snapped at the mast-boom attachment point. The two metre Yagi will still be usable after straightening a couple of elements and replacing the front director, which was broken in the fall. The antennas were on an azimuth and elevation rotator system.

So I will need to think about how to erect a new mast. I will also need to consider what replacement antennas I will need…

Offence taken

Earlier in the week I received a letter from a reader in WA. Whilst I have his permission to use the letter, I will not identify the writer.

Our VK6 correspondent took offence at a small comment made by Robin VK7RH in his August column:

"..... event in North America quickly dominated the news, relegating the news in Iran to the back pages. And what was that event? The unexpected death of Michael Jackson in California. This rapidly took over and pushed out everything. In my opinion it was not news nor earth-shattering."

I respect the opinions of both Robin and our VK6 reader. Robin simply stated some facts and expressed his opinion about the way the media dropped many news issues and gave a large amount of attention to Mr Jackson's death.

The way I read the comment both then and now was that it was primarily a comment on the behaviour of the media. Our VK6 reader considers that Robin's remarks were "insensitive". I can appreciate that many might agree with this view. But perhaps all might reflect on the entire situation and both Robin's comment and my interpretation? I do apologise for any offence taken, on behalf of myself as Editor and for Robin (who has not yet had a chance to comment on the letter).

73
Peter VK3KAI

ar

Michael Owen VK3KI

What about WICEN?

In the July 2009 Amateur Radio Phil Wait wrote the Comment under the heading "Amateur Radio and Emergency and Community Services".

He outlined the WIA Board's plan to provide two competency levels for radio amateurs engaging in emergency or community service communications, pointing out that without appropriate competencies to meet concerns about health and safety in emergency situations, the amateurs' skills were unlikely to be fully utilised. The first level would be a basic skill and the second level would require an amateur qualification and would be directed to the provision of communications technology.

The WIA Board believes that the Victorian bushfire experience has highlighted an area where amateur radio can play a useful and universal role, somewhat different from the traditional amateur equipment based message handling role of WICEN. It is clear that the manpower resources of the emergency service organisations are likely to be stretched to breaking point during a protracted emergency event and that suitably trained and qualified amateur radio operators, who are able to operate non-amateur emergency services communications systems, provide a valuable back-up resource that serves the broader community.

By training and accrediting a pool of operators to a level at least sufficient to satisfy mandatory safety and occupational health and safety requirements; and in emergency services operating procedures, the WIA can assist by ensuring amateur operators are available to provide that critical assistance in times of need.

Such a qualification is equally important in another situation. Sometimes it is the amateur who happens to be in a particular place at a time following a catastrophe and before the emergency services and their communications equipment can be deployed. The amateur who may not be interested in participating on a regular basis in a WICEN organisation will nonetheless be better equipped to provide that first response assistance with the qualifications we envisage.

But all of that has led to a number of questions, particularly the question "What about WICEN?"

In fact, the Board when it decided to adopt Fred Swainston's recommendations as described by Phil, also addressed the question "What about WICEN?"

But what is WICEN?

WICEN ("Wireless Institute Civil Emergency Network") are today groups that have grown out from under the umbrella of the WIA in the past in response to their own local or regional circumstances and needs.

In some parts of Australia, WICEN does not exist in any meaningful way. In other parts WICEN is a group that has developed strong and effective relationships with local or regional emergency service organisations and local authorities. In some cases the groups have become community service focussed groups, rather than emergency communication focussed groups.

Today WICEN is a very diverse collection of organisations and groups, generally separate legal entities and all legally independent from the WIA even though they use the name.

Some WICEN groups are affiliated clubs of the WIA, others are not.

Whether or not a particular WICEN organisation supports the competencies that will be offered is very much a matter for it, having regard to the services it supports and their requirements. Certainly, we would expect that many will want to be involved in acquiring the competencies that many already have as well as have an input as to what should be included, particularly in the second level of competency.

What is clear is that in the diversity of groups we generically refer to as WICEN there exists a body of experience, skills and equipment that is unique, very valuable and must be retained.

What is not clear is what should be the role of the WIA so far as the WICEN groups are concerned.

We need to take into account that since the ITU World Radiocommunication Conference in 2003 the administrations of the world have been encouraged to use the resource of amateur radio internationally for emergency communications. The International Amateur Radio Union is working to better develop amateur radio's skills to satisfy that need. As the Australian IARU society the WIA has a role in that aspect of emergency communications.

What should be the role of the WIA so far as the existing WICEN groups are concerned is not so clear. The one thing that the WIA should not do is to attempt to dictate its view of how WICEN organisations should be structured or how they should operate. But does it have a coordinating role? Should it provide the means by which the existing and new WICEN organisations can meet and agree on the fundamentals that will facilitate intercommunication and personnel exchange?

The WIA Board takes all of this very seriously. Three of its directors, Phil Wait, Ewan McLeod and Peter Young form the Emergency Communications Group, with Phil taking the overall coordinating role.

That Group has been given two tasks, the task of implementing (with the help of the WIA Nominated RTO Trainsafe), the two levels of competencies I have referred to and the task of identifying the current position of the various existing amateur emergency communications organisations and to identify, in the different parts of Australia, the roles that would meet the needs of emergency organisations, and on the basis of the facts as they find them, define a structure and role that will support a better amateur emergency communications resource.

No, the WIA is not going to write-off WICEN. But it does want to know what it can most usefully do to support the diversity of what we often, too simplistically, refer to as WICEN.

If you have an opinion or can provide information or in any way contribute, please let our Emergency Communications Group know. The most important question, in this context, is what should be the role of the WIA?

You can write to them care of the national office, or better, send your contribution by email to secretary@wia.org.au

Help Phil and his team to really answer the question "What about WICEN?"

ar

WIA News

2009 Region 3 ARDF Championships Cancelled

Yoshio Arisaka JA1HQG, Chairman of the IARU Region 3 ARDF Committee has released the following statement:

"On behalf of the IARU Region 3 ARDF Committee, I truly find it regrettable, but I must make an announcement that the IARU Region 3 ARDF Championships planned to be held in 2009 have to be cancelled due to the following reasons.

1. After careful consideration, the host society, the Radio Amateur Society of Thailand, has made a decision that it would be prudent to cancel the championships planned to be held in Thailand from October 29 to November 3, 2009 because of unexpected possible political problems.

2. There is not enough time to make all the arrangements to hold the Championships in another country in the Asia Pacific Region in 2009.

We apologize for any inconvenience that this may cause."

ARRL was correct about BPL Interference

In 2004, the ARRL requested the FCC release internal staff studies showing support for its decision to allow the operation of BPL devices under modified FCC part 15 rules. The FCC released some information, but large and critical sections were redacted (withheld) from public release. The ARRL appealed the FCC redaction in the US Court of Appeals, where the FCC was subsequently found to have deliberately withheld information contrary to its conclusions. The ARRL cited the redacted information during the appeal proceedings.

Noel Ferguson Awarded Life Membership of the Sunraysia Radio Group Inc.

On Sunday 19th July the Sunraysia Radio Group Incorporated held its AGM in the Pioneer room at the Working Mans Club, Mildura. The meeting was attended by members of the Sunraysia Radio Group and visitors from the Swan Hill Radio Club.

A highlight was conferring of life membership on Noel Ferguson VK3FI for his significant contribution to the club over a number of years. Noel first become secretary of the club around 1995, bringing ideas and strategies that led to significant growth to the club. Noel was one of the first to volunteer as a WIA Assessor under the new examination system and, after purchasing a data projector, began running Foundation courses from his shack, bringing many new people into the hobby and into the club. Commendation letters were read from WIA President Michael Owen VK3KI, President of ARV Jim Linton VK3PC and the WIA's RTO Fred Swainston VK3DAC.

Following the formal AGM three guest speakers addressed the meeting. WIA Director Robert Broomhead VK3DN spoke of recent activities of the WIA, including the Foundation and upgrade licence programs, the WIA bookshop, the development of the WIA website and the work that the Institute has undertaken on behalf of the ACMA. Robert presented to the Sunraysia Radio Group Treasurer Norm MacMillan VK3XCI the 2008 WIA Club Grant cheque for $500 awarded to the club to assist with the upgrade of the Swan Hill repeater system.

Ray Naughton VK3ATN from ATN Antennas told some amazing stories with useful information on what can be achieved with well designed and very large antenna systems, including Moon bounce.

Then Tony Hutchison VK5ZAI spoke of his recent trip to the USA, visiting the homes of many well known hams, a visit to the Dayton convention and a tour of the facilities at NASA's Johnston Space centre.

The afternoon concluded with the presentation of the Max Folie Achievement Award to Peter Norris VK3JUG. The Max Folie award is an award designed to encourage involvement in club activities.

Gippsland Gate Radio & Electronics Club Hamfest

The WIA participated in the Gippsland Gate Radio and Electronics Club Hamfest held at Cranbourne on Saturday 18 July 2009.

President Michael Owen VK3KI, Secretary Geoff Atkinson VK3AFA and Director Peter Young VK3MV were present on the morning and met and spoke with the many amateurs who came past the WIA trading table. Many took advantage of the opportunity to purchase books from the WIA bookshop as well as merchandise items such as shirts, caps and badges.

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One Commendation was presented to Peter Weeks VK3YZP in recognition of his work in WICEN over many years and the other was presented to Mark Dods VK3XMU WICEN State Secretary in recognition of the work of WICEN in the Victorian fires and his contribution to WICEN.

WIA Director visits RSGB

During a recent business trip to London, WIA Director Robert Broomhead VK3DN met with President Colin Thomas G3PSM and General Manager of the RSGB Peter Kirby G0TWW.

They discussed matters relating to the services provided by both our radio societies and the promotion of membership to our societies, exchanging ideas and material for the ongoing marketing and promotion of Amateur Radio.

Robert reports that one thing that did become apparent during the discussion was the firm commitment that UK amateurs have to membership of their society, with the RSGB having over 50% of all licensed amateurs as members. In Australia the WIA has approximately 4,600 members of around 15,000 licensed radio amateurs.

Robert also visited Bletchley Park the home of the code breakers during the Second World War.

Today Bletchley Park has become a popular tourist attraction, and the RSGB have a public display of amateur radio at the site. The RSGB HQ Station GB3RS operates from the display area.

The RSGB has announced that it will move its "public headquarters" (library, radio station, museum and bookshop) to Bletchley Park in a purpose built facility which is scheduled to be constructed by April 2010.

continued on inside front cover

A phasing type transceiver for 144 MHz - Part 2

Dale Hughes VK1DSH

The previous part (Part 1) of the article described the general design principles of the transceiver and the details of the RF and AF sections of the unit. This instalment will describe the remaining circuit modules and provide construction and adjustment information.

Microcontroller and DDS circuitry

(See Figure 10). A microcontroller provides the supervisory and control functions necessary to operate various parts of the transceiver:

- The Direct Digital Synthesiser (DDS) which generates the 28 MHz local oscillator.
- Transmit/receive sequencing and 'roger beep'.
- Liquid crystal display and front panel controls.
- Battery voltage monitor.
- Frequency memories.

Considering the DDS first; the AD-9851 has its own 30 MHz oscillator. This is internally multiplied to 180 MHz and used as the main DDS clock.

This implies a useful upper limit of about 60 MHz for the DDS output. The microcontroller controls the DDS through a fast serial connection and the frequency is set by sending a 40 bit string which contains the binary representation of the wanted frequency as well as some control information.

The control string is sent every time the frequency is changed; either by rotating the shaft encoder or by pressing the recall memory button.

The output from the DDS passes through several filters to remove spurious frequency components; a 70 MHz low pass filter removes any of the 180 MHz clock and higher order alias frequency components and the resulting sine wave is passed to a high speed comparator which generates a logic level square wave.

This signal is then passed through a 28 MHz double tuned circuit to produce a sine wave which feeds the first mixer.

Tuning is by means of a low cost shaft encoder with 24 pulses per revolution. The output pulses are debounced using a pair of Schmidt triggers (74HC14). The microcontroller reads the pulses and updates an up/down counter which holds the frequency information which is also shown on the liquid crystal display.

Two step rates have been programmed: 1 kHz/step and 10 Hz/step (this is easily changed if required). Frequencies can be stored in the local memory by selecting which memory and then holding down the memory Read/Write button for two seconds. The frequency is then written into EEPROM for later recall.

Two memories are provided in the current version of the software, but many more could be available if required.

Other front panel controls and connections allow the user to lock the dial frequency, select the tuning step or connect a Morse key for CW. When operating CW, the microcontroller scans the key input and turns the local audio oscillator on and off in sympathy with the key presses. This produces a carrier on the wanted output frequency. The same process generates the 'roger beep'.

A stable reference supply of 5.120 volts is required for the analogue to digital converter which is used to measure the battery voltage. In my case, this is provided by a REF-02 chip which is mounted on the separate regulator PCB. Another option would be to use the more readily available LM336-5 reference diode.

So long as you can generate a stable reference voltage of 5.120 volts, you should not encounter any difficulty with this stage. The reference supply is connected to the microcontroller by a short screened cable.

A separate three-terminal 5 volt regulator provides the supply for the microcontroller, DDS and display.

Transmit/receive switching occurs in two ways: when the PTT button is pressed or released separate pulses are supplied to the latching relays on the main audio processing and first mixer boards. Brief pulses are supplied which drive the relays through switching transistors. After the lines are pulsed, they remain quiescent. The other line toggles according to the wanted state and is high (~ +5V) for transmit and low (~ 0V) for receive. This line controls the main antenna and power amplifier relay via a Darlington transistor mounted on the power regulator PCB.

Extensive filtering and screening ensures that no high frequency 'hash' from the microcontroller or DC-DC converter is heard in the receiver. Screens were made from un-etched PCB material and all supply and control lines were passed through feed-through capacitors. Control lines were also run in miniature coaxial cable so that they could not radiate any noise.

Power and control circuitry

(See Figure 11). A number of different supply voltages are required for various parts of the circuitry.

Plus and minus 12 volts is required for most of the op-amp circuitry and this is generated by a commercial DC-DC converter recovered from junked equipment. The unit used is a Cossel ZW10 1212 unit and it supplies +/- 12 V @ 450 mA for the op-amp circuitry. Additional filtering of the DC-DC convertor output was added to eliminate power supply 'hash'.

The additional components were mounted on a section of printed circuit board which was soldered to the top of the converter box. This may not be required if other converters are used.

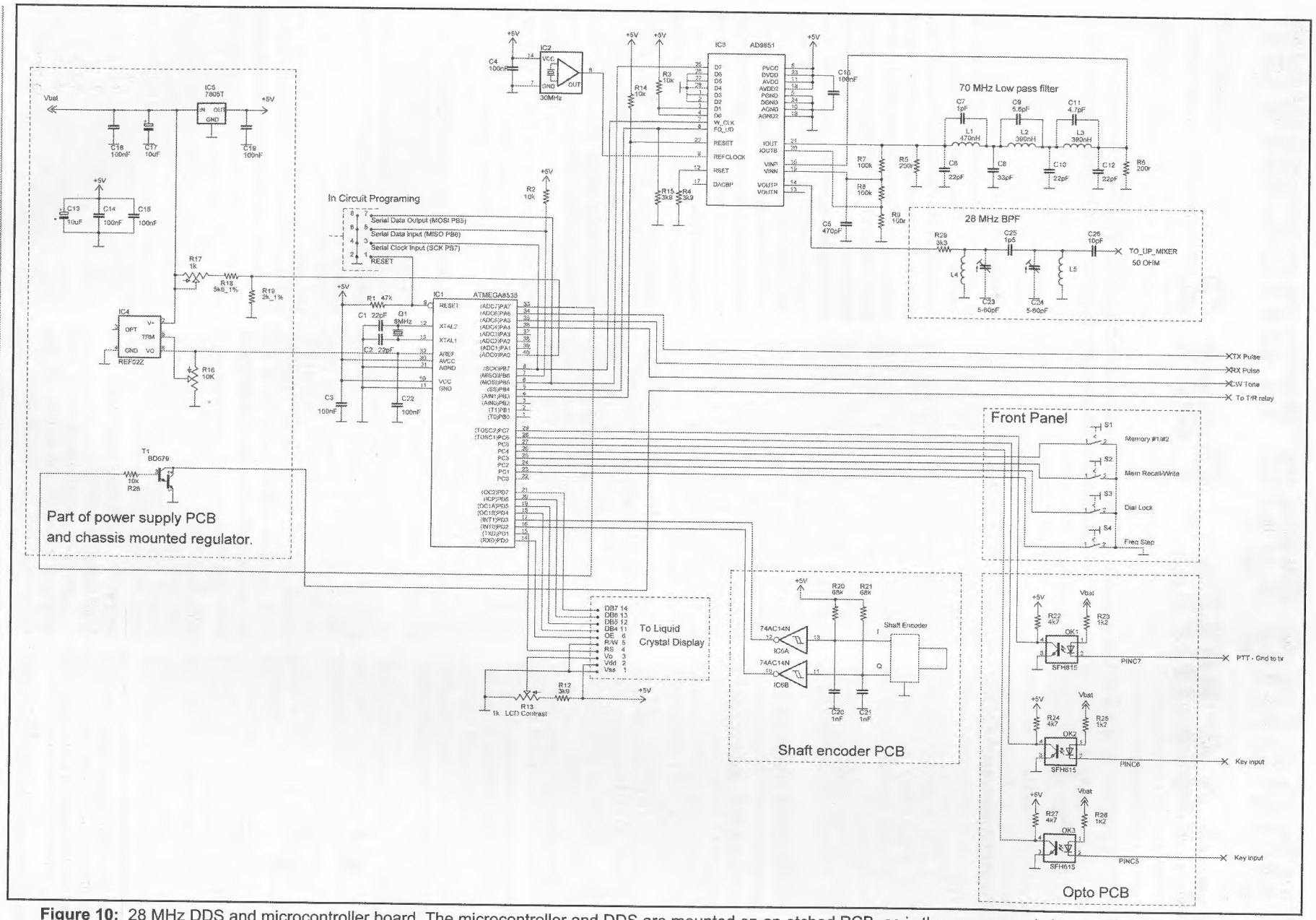

Figure 10: 28 MHz DDS and microcontroller board. The microcontroller and DDS are mounted on an etched PCB, as is the power supply board. The other small boards use Vero board to mount the components. Inductors L4 and L5 are 10 turns on Amidon T50-6 toroids. The other inductors are 0805 surface mount parts. For the rest of the components, a mixture of SMD and leaded components were used.

A number of three-terminal regulators generate five and eight volts for logic and audio circuitry; these are mounted on the chassis which then acts as a heat sink.

Polarity protection is provided by a relay which can only operate when the applied voltage is of the correct polarity as it is powered via a diode.

Construction information

As already discussed, most of the circuitry is built on a number of printed circuit boards. These boards are mounted inside a homemade aluminium enclosure and it's rather cramped inside the box when all of the modules are installed. The various boards are screened from each other by screen made from un-etched printed circuit board and it's better (and easier) to include the screening in the first place than to add it later. All of the signal cables are run in miniature screen coaxial cable.

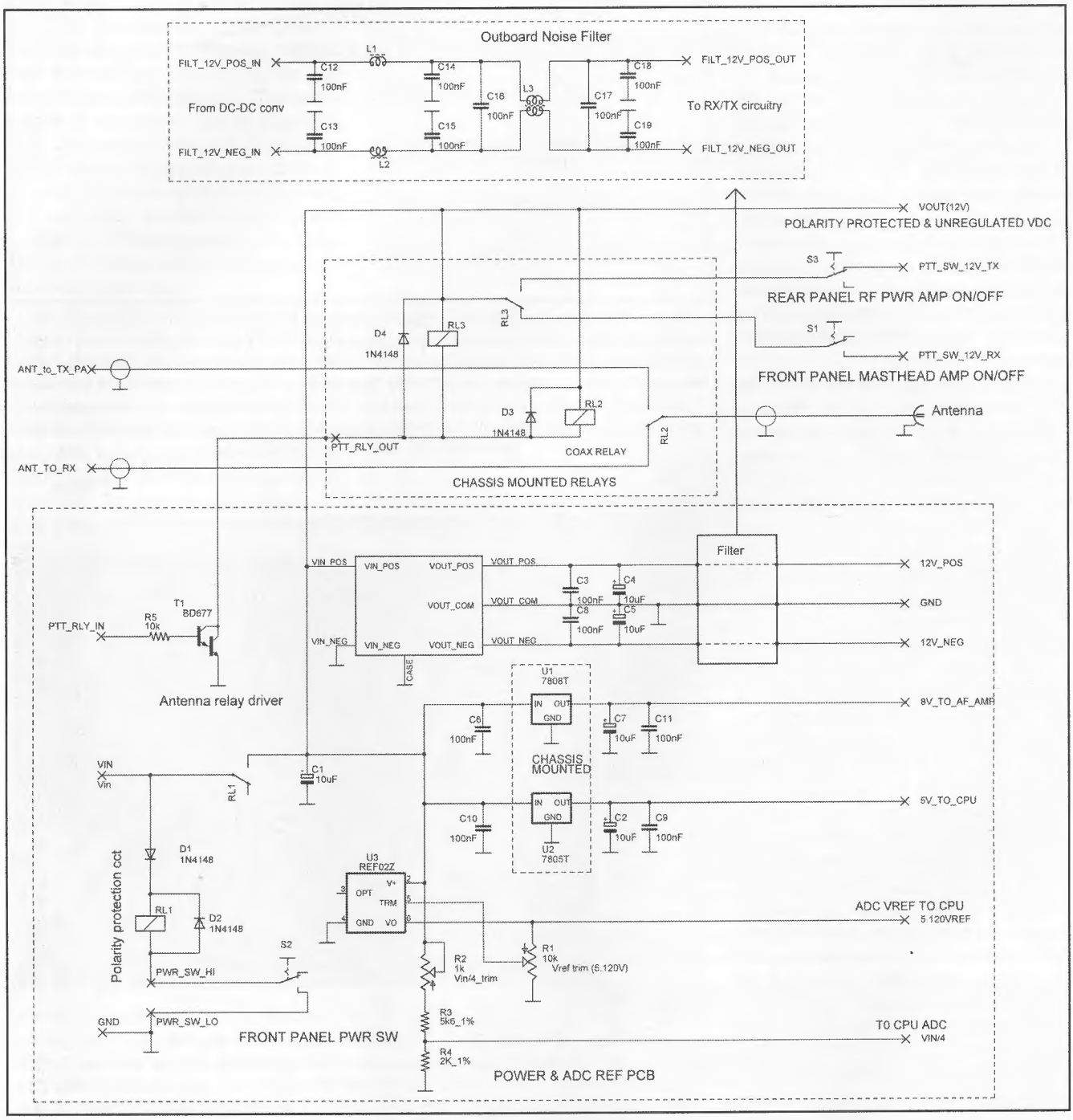

Figure 11: Power supply and control circuitry. L1, L2 and L3 are as many turns as will fit on a 29 mm ferrite sleeve core; Jaycar part number LF1260. The filter circuitry may not be required if the DC-DC converter does not emit any RFI. The three terminal regulators are mounted on the main chassis which acts as a convenient heat sink. Again, as with all of the other sections of the transceiver, the builder has a lot of freedom to experiment and use other parts that may be on hand. A number of adjustments are required on this board; the ADC reference voltage needs to be trimmed to 5.120 V DC using R1 and the battery voltage monitor trimmed to Vbat/4 using R2.

Software

The software for the transceiver is written in assembler code using the Atmel Studio4 development environment. The software is readily modified for operation at other frequencies.

Adjustments

If good quality components are used and sufficient attention is made to matching of components, no adjustment of the audio quadrature network will be required.

The first adjustment is to set the 116 MHz oscillator to the correct frequency by adjusting the inductance in the drain of the oscillator FET. A frequency counter or accurately calibrated receiver can be used to set the frequency. Following the frequency adjustment, the RF quadrature network and transmit and receive amplitude balance controls must be adjusted. These adjustments are somewhat interactive and an iterative approach is required.

Several methods can be used and it is instructive to try them. With an oscilloscope, the constructor can observe Lissajou figures and measure the phase angle directly as shown in Figure 12. The performance of the RF network is easily seen if a stable signal is injected at, say 116.001 MHz (assuming the crystal is at 116.000 MHz) giving a 1 kHz output from the second mixers. If the amplified I & Q signals are connected to the X & Y inputs of the oscilloscope something resembling a circle should be seen. The variable capacitors of the RF phasing network can be adjusted to give the best circle – indicating that the amplitude and phase adjustments are correct. At this point it is best to listen to the opposite sideband by switching the input frequency to 115.999 MHz. If all is well, the amplitude of this signal will be considerably less than the previous signal; by adjusting the receive amplitude balance control it should be possible to completely null out the signal. Adjustment of the diplexer inductors will also have a small effect, particularly at the higher audio frequencies.

The process for adjusting the transmitter is similar, except that as the RF quadrature network is already adjusted for the best phase difference, the only adjustments are the transmit amplitude balance and microphone gain controls. Audio drive should be adjusted to maximise 'clean' RF output, that is, with minimum noise and distortion. The sideband suppression can be measured

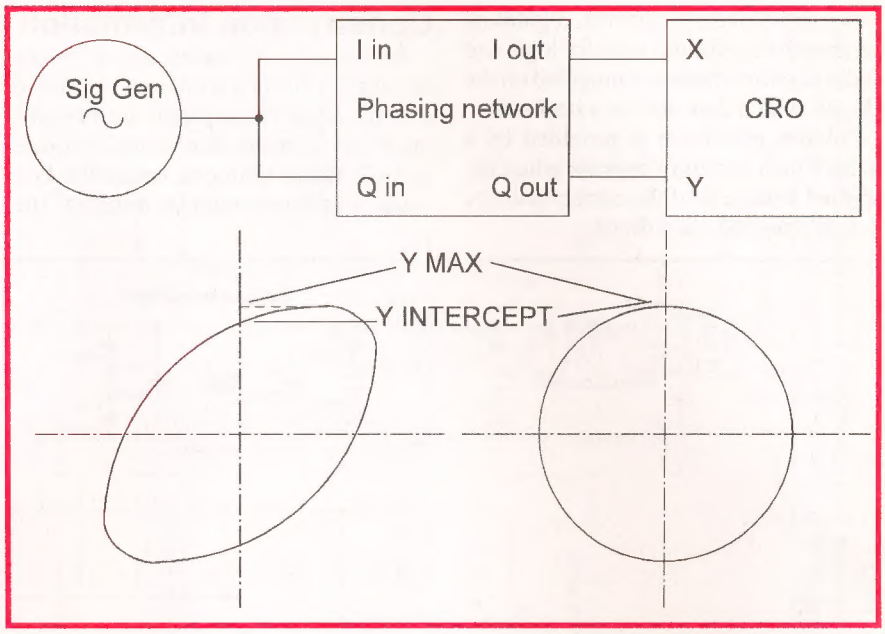

Figure 12: Method of checking quadrature network performance. In the case of the audio phasing network the signal generator outputs an audio frequency in the range of 300 Hz to 3 kHz. In the case of the RF network, the input is the 116 MHz input with the signal generator set to 116.001 MHz (assuming the local oscillator is 116.000 MHz) and the I & Q outputs are then taken from the amplifier outputs. In both cases the oscilloscope will show the phase relationship between the two outputs and the phase difference (θ) can be calculated using:

$$\sin\theta = \frac{Y\,\text{int}}{Y\,\text{max}}$$

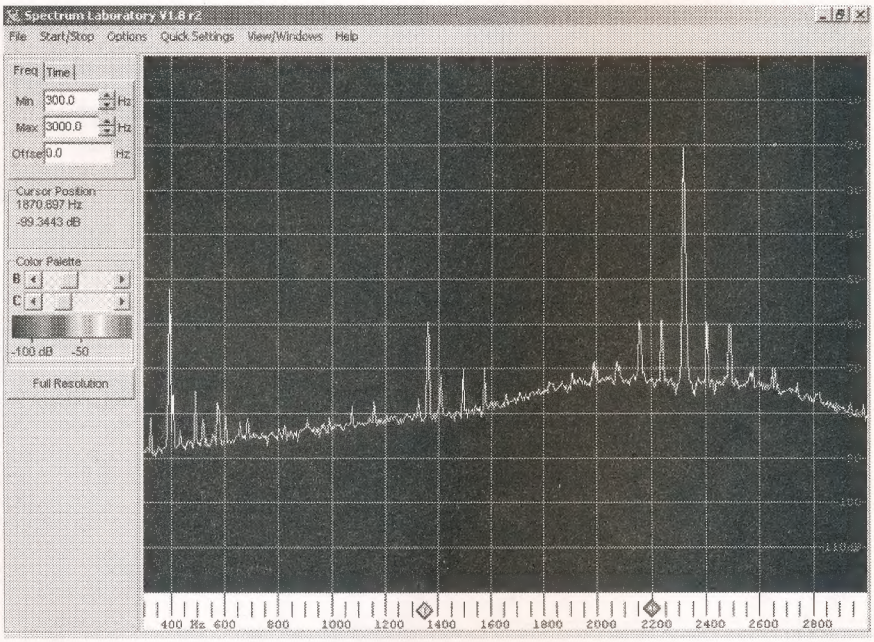

Figure 13: PC audio spectrum analyser measurement of carrier and sideband suppression. The spectra were recorded from the output of a receiver with the receive frequency slightly offset from the transmitter; this allows the upper, lower sidebands and carrier to be seen. A modulating frequency of approximately 950 Hz (and some 50 Hz hum…) was used. The carrier is the peak at 1350 Hz; the upper sideband is at 2300 Hz and the lower sideband is at 400 Hz. It can be seen that the carrier is approximately 40 db below the upper sideband; the lower sideband is approximately 32 dB below the upper sideband. Noise and distortion products can be seen around the various peaks, but are well below the level of the upper sideband. On air signal quality reports have been favourable.

using another receiver and switching between USB and LSB while making the balance adjustment. Careful adjustment should suppress the unwanted sideband by at least 35 dB. Note that unless the receivers AGC can be switched off, this method might give confusing results.

Accurate measurements can be made using a spectrum analyser if one is available; however it is just as good to use a receiver and a PC with a sound card and software like 'Spectrum lab' (see Reference 4 for details). The audio output of the receiver can be displayed in the frequency domain while the phase and amplitude adjustments are made. It is quite a treat to watch (as well as hear) the unwanted sideband suppression change as the adjustments are made. Figure 13 shows a transmitter spectrum recorded in this way.

The RF power amplifier is initially best adjusted for maximum power output using a suitable signal generator. Further adjustments can be made when the transceiver is complete, at which time the PA can be adjusted to give the maximum power consistent with highest signal quality. The PA stage has shown instability and appears quite robust.

The only other adjustments are to set the analog to digital converter reference voltage to exactly 5.120 volts and the battery voltage divider to give the correct battery voltage display. Adjustment of the sidetone volume, in both receive and transmit modes, is done by changing resistor values.

Component and supplier information

The RM6 pot cores used for the diplexer inductors might be difficult to source; however based on my experience with the prototype transceiver, the ability to adjust the inductance is not critical. So it is likely that using selected fixed inductors would work just as well. All of the other parts: op-amps, transistors, passive components and so on are generally available through the usual suppliers and substitutions can be made for most op-amps to suit what types are available.

The RF power transistors may be the most difficult item to locate. A useful source of RF components is ex-commercial two-way radios that are generally available at field days or through clubs and other amateurs. The 2N5944 and 2N6080 transistors were junk box items and are available new - but are very expensive! Experiment with other devices that may be more readily available. Suggested suppliers are shown in the table below.

Concludes at foot of next page

Item	Suggested supplier
TUF-1 mixers, MMIC's, AD-9851 DDS. J-310 JFET's. Shaft encoder. Assorted surface mount parts and a wide range of other components.	Mini-kits www.minikits.com.au
TUF-2 mixers and other Mini-circuits components e.g. MMICs.	Clarke & Severn Electronics www.clarke.com.au
Amidon cores.	TTS Systems www.ttssystems.com.au
Miniature and surface mount inductors, capacitors etc. A wide range of components. REF-02 voltage reference.	Farnell Australia http://au.farnell.com/
Op-amps, transistors, general components.	Futurlec www.futurlec.com.au
Trimmer capacitors & general components. RF transistors.	Rockby Electronics www.rockby.com.au
DC-DC converters.	Powerbox Australia www.powerbox.com.au

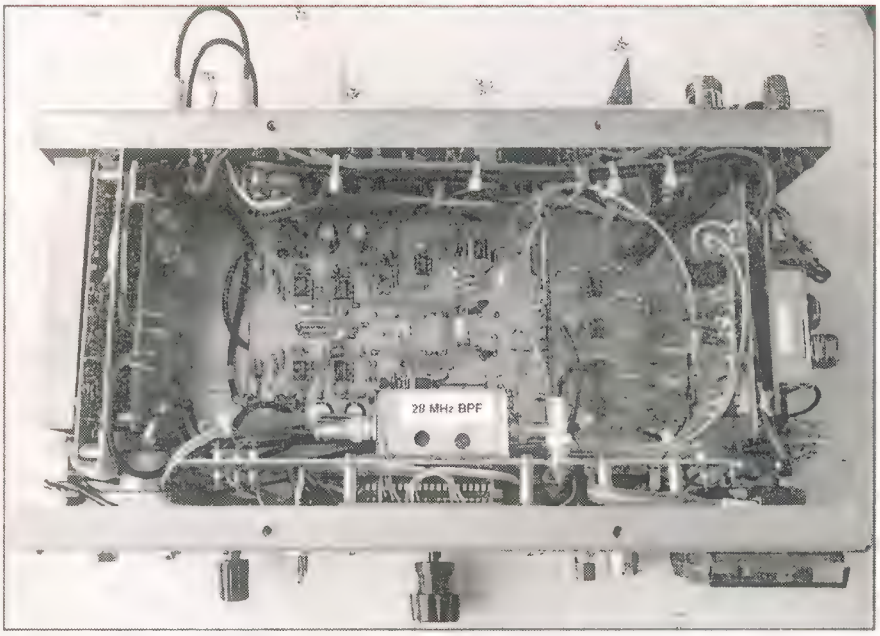

Figure 14: Interior view of the 2 metre transceiver. The RF circuitry is on the left hand side of the enclosure, the power supply and audio amplifier is on the right hand side. The RF power amplifier is mounted on the rear panel of the enclosure and the DDS circuitry is mounted behind the front panel.

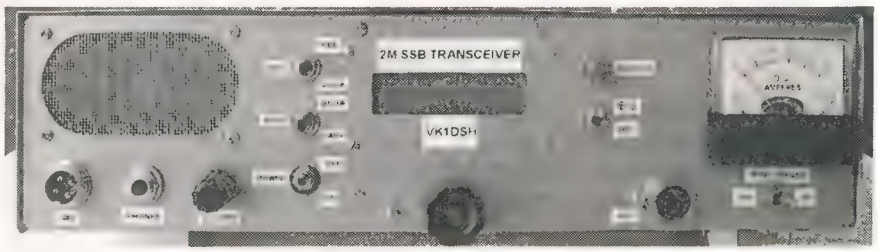

Figure 15: A view of the front panel. The DC ammeter provides useful information on the operation of the transmitter power amplifier; however it is not essential and can be deleted from the design if the constructor wishes.

Line Balance Meter discussion

Following the publication of the Line Balance Meter article in the August Amateur Radio, Rod VK3AAR sent in a detailed Over to You item. In the interests of clarity we relayed these queries to the article's author, Lloyd VK5BR, who in turn responded with an amended diagram. Here is Rod's item raising a number of questions, together with Lloyd's response.

Dear Editor

In my opinion there are significant technical issues with the article by Lloyd Butler in AR for August 2009 describing a transmission line balance test meter. These compromise its operation enough to make the unit fairly pointless.

The circuit is essentially two current measuring circuits using two toroidal current transformers where the output (i.e. the toroidal winding) is switched to a measuring circuit representing a low impedance load (C1 burden etc) via a diode (D1).

This means that when the device is in use, one of the toroid burdens is unloaded and the balance of the two-wire transmission line is disturbed by the existence of the half-turn inductance that is the open-circuit toroid. As frequencies increase, the effect of this asymmetric condition becomes greater, and the absolute longitudinal impedances also present a problem.

Making current measurements in RF circuits (lossless or otherwise) is not a trivial matter, and Lloyd Butler's circuit and device would be significantly enhanced by the inclusion of resistive loads on EACH of the toroid outputs – those loads being selected to be non-reactive at the frequencies of interest.

Two further issues arise in the selection of those loads (considered in the context of the design of the toroids and impedances): that the effective longitudinal inductance of EACH toroidal load is small in comparison with the transmission impedance of the line being tested, and that the metering circuit (D1, C1 etc) represents a load impedance (burden) that is high enough in comparison with the non-inductive load that is placed on each of the toroid outputs so as not to change the longitudinal impedance of each side of the line as switched.

The combination of those considerations ensures that the testing device does not disturb the longitudinal line conditions significantly, and that switching from outer to inner metering does not adversely change the balance anyway.

So much for fundamental impedance matters. I strongly suspect that Lloyd's comments on SWR deterioration at VHF would not be as necessary if the above were considered and it leaves

A phasing type transceiver for 144 MHz - Part 2 continued

Conclusion

With the information presented and in conjunction with the various references given, a SSB transceiver can be constructed for the two metre band.

In principle, the same approach can be used to build a transceiver for any other frequency band by making the appropriate changes to the RF quadrature network and signal frequency circuitry.

The main limitation of the existing design is the lack of any sort of Automatic Gain Control which means that the volume of the received signal can be low at one moment and quite loud the next, especially if they are from local stations and they are using high powered transmitters.

Despite this limitation, the transceiver works nicely, quite a number of pleasant contacts have been made using it.

While the present design provides a nominal three Watts output, additional linear amplification can be readily employed. I have recently built a 30 watt linear amplifier for this project; although a number of alternative designs can be found in the references or other literature.

The three Watt output is quite sufficient for local contacts, even DX; contacts of several hundred kilometres have been achieved using a nine element Yagi antenna. With a mast head amplifier and 30 Watt amplifier the transceiver has been successfully used for two-way contacts over the Canberra to Melbourne path via aircraft scatter.

The circuit board layouts and microcontroller firmware can be supplied to anyone who would like to use them as the basis of their own transceiver.

Acknowledgements

I would like to thank the various local operators who have provided opportunities for on-air tests and given signal quality reports. I would also like to thank Bill Maxwell VK7MX for reviewing the article and providing useful feedback and suggestions on content and style.

References

Reference 1:
"Experimental methods in RF design". Hayward, Campbell and Larkin. ARRL, 2003.

Reference 2:
"VHF/UHF handbook". Diddulph. RSGB, 1997.

Reference 3:
"Solid State Design for the Radio Amateur". Hayward and DeMaw. ARRL, 1977.

Reference 4:
http://freenet-homepage.de/dl4yhf/spectra1.html "DL4YHF's Amateur Radio Software: Audio Spectrum Analyzer"

Note:

Figures 10 and 11 are available in TIF format on the WIA website for those readers who require it in more detail.

ar

open the matter of how low a frequency might give fully satisfactory results. As burden loading of current transformers is a critically important issue at even power-line frequencies, I think that the above observations should apply at all RF frequencies.

Those who are interested in longitudinal out-of-balance conditions will be aware that SWR on the transmission line only tells part of the story. Some of Lloyd's comments are relevant to that although it is not specifically stated that way.

In his footnote he observes some matters on earth currents which may apply reasonably to small equipment where the physical size of the equipment is significantly less than the wavelengths being considered. In large installations – for example large amateur rigs on 6 metres or even 10 metres, this is far from the case, especially when the antenna is near the transmitting equipment.

In very large high power applications, local induced currents that are more related to radiation than the transmission line design can be so high as to be destructive. There is also a very special case where non-balanced antennas are used, such as is common at 160 metres or in new experiments in the LF band, where the effectiveness of the local earth is critical to operations and the existence of "floating voltages" can be so large as to mask other matters.

Metering under these conditions is problematic in the true sense of the word, and some considerations extend to difficult management of local earth connections generally. In a commercial world, those problems extend up to around 10 MHz when large vertical antennas are used.

In some special cases e.g. mountain top installations on rock footings, or at dry sandy locations where earths cannot be obtained easily, some very special action is needed. In some cases, "logical Ohm's Law" does not even seem to apply!

On a final technical comment, current measurement add-ons like this have to be designed to carry the currents concerned, and toroidal saturation and the power that has to be dissipated in the loads (burdens) have to be considered.

I for one have a number of badly damaged commercial in-line sensors where a 400 W PEP transmitter has been connected to an antenna that was faulty and the currents and/or voltages present have been enough to destroy the components around the toroid.

The above comments are from a professional point of view, and an amateur approach does not necessarily have to be so rigorous, but within an amateur environment

I guess I need to establish my credentials on this – around 40 years as a professional radio and transmission engineer with work with the Navy and Broadcast Engineering, and from time to time the responsibility for running instrumentation laboratories (some of that work is classified).

And I have held an amateur licence for 50 years. If you go through the AR archives you will find a series describing a multiband HF linear design and construction in 1974 that was considered good enough to warrant the technical award for that year – that might justify my credibility on practical amateur matters.

Rod Reynolds (B. E. (Tas), M. Eng. Sc. (Monash), C. Eng. (UK), MIET)
VK3AAR
reynolds@mira.net **ar**

Lloyd VK5BR responded

The observation by Mr Rod Reynolds that the current transformers should have been terminated is perfectly correct.

In fact, they were terminated as you can see if you look at my rear view photograph of the unit (Photo 3, Page 7 Amateur Radio, August 2009). The two 18 ohm terminating resistors are on the lower left of the photograph. As there are 15 turns on the toroidal core, and applying the inverse square law, one might assume a resistance reflected in series with the wire approaching as low as 0.1 ohm, a negligible value compared to a 50 ohm line impedance.

Had the transformers not been terminated in a low resistance, they would have inserted inductance in series with the line legs and not worked as current transformers.

In my advancing old age (I offer as a good excuse), I omitted to put the two 18 ohm resistors on the circuit diagram I sent to AR. I should have picked it up after Bill VK3BR sent me a draft of his redrawn circuit for publication. But I did not.

I can only apologise for my omission and ask that you correct the omission in a future issue of AR. The corrected circuit is also attached.

I must also thank Rod Reynolds for observing the error and saving me the embarrassment of having to sort out the problem further down the line when someone else attempted to get the unit working.

I agree entirely with Rod's comments made and the error was in my circuit checking and not in my original design in line with what Rod Reynolds has also said.

Best Regards Lloyd VK5BR

Editor's note:
There was some further correspondence regarding potential performance of the system at VHF frequencies and regarding the power handling capacity of the resistors used. Lloyd noted that the circuit was designed for HF frequencies only and that the VHF performance would likely to be compromised. He further noted that he had not observed noticeable warming of the resistor at 30 W continuous.

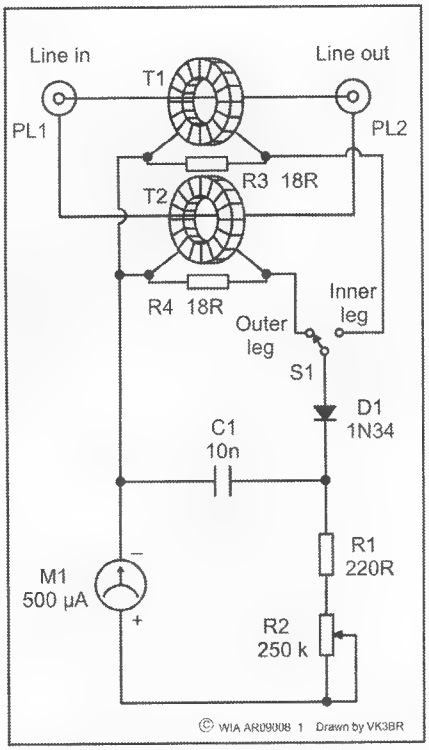

Figure 1: The corrected circuit diagram of the balance meter with the resistors noted in the diagram at R3 and R4.

Getting started on 136 kHz

Drew Diamond VK3XU

Hopefully, at some time soon, advanced amateurs will gain an LF band - 135.7 to 137.8 kHz (only 2.1 kHz wide). Apart from a handful of dedicated experimenters*, Australian individuals have not had transmitting access to frequencies below 1.5 MHz for the better part of 100 years.

Our UK and European friends have been working 2,200 m for about 10 years, and some keen New Zealanders have been using 130 – 190 kHz for a few years also. As a result, a wealth of practical amateur literature now exists to guide persons wishing to explore the challenging world of LF.

History

Radio (or wireless) communication is now well over 100 years old. Pioneers quickly found that large or 'long' wavelengths (early radiomen talked in terms of 'wavelength') achieved greater distances. To get good results, everything had to be big; huge high antennas, powerful sizzling, crackling, spark transmitters, or mechanically-driven alternators. Naval and merchant shipping were the main commercial users.

However, as from the beginning, a host of enthusiastic experimenters and amateurs also shared that part of the spectrum. Unfortunately, there being little or no regulation, severe mutual interference was a big problem. Eventually, amateurs were exiled to the supposedly 'useless' wavelengths below 200 m (Reference 1).

Today, LF is used for a number of applications, including non-directional navigation beacons (NDBs), broadcasting (mainly in Europe, around 200 kHz) and communications. On a recent holiday trip to the UK, it was interesting to listen to the powerful broadcast signals from France, Germany and, of course, England's BBC on 198 kHz.

These signal(s) seem able to reach into every nook and cranny of that hill and dale country. I confess to feeling a pang of envy upon hearing amateur narrow-mode signals around 136 kHz (and, during our last week near London, copying ordinary CW Morse signals on their MF allocation around 502 kHz).

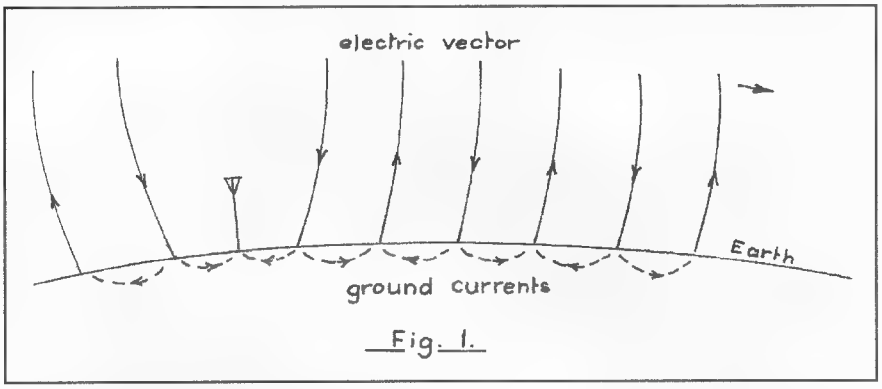

Figure 1: How the wave front is slowed by interaction with the ground.

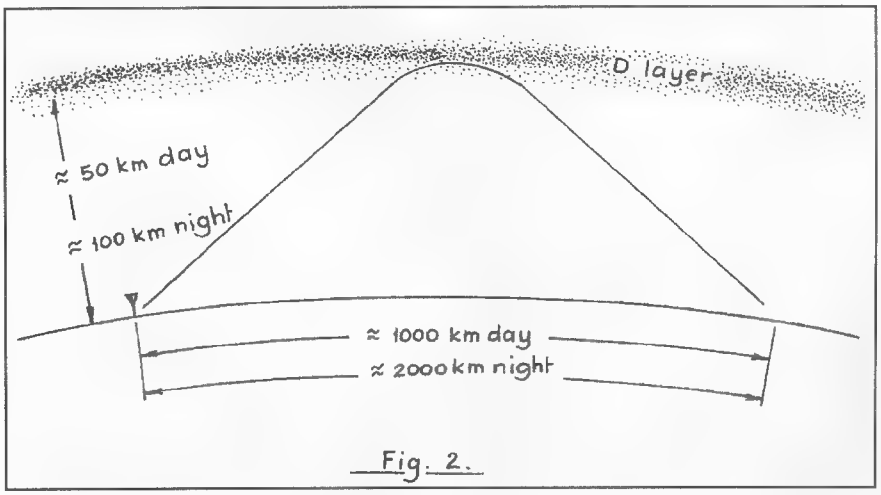

Figure 2: Signals deflected from the D layer at about 50—100 km above the earth's surface.

Propagation

On LF (generally 30 to 300 kHz), transmitted signals may reach a receiver in two ways. Firstly, by way of ground-wave energy that follows, or 'hugs', the curvature of the earth.

Figure 1 attempts to show how the wave front is slowed by interaction with the ground, which causes the front to tilt slightly, thus allowing signals to be detected far beyond the visible horizon (Reference 2).

Unlike our familiar higher frequencies, the ground-wave is less attenuated by surface absorption (particularly over sea-water), and thus may be detected without a 'dead-zone' up to perhaps 2,000 km from the transmitter.

Secondly, signals may reach a receiver by way of ionospheric deflection from the D layer at about 50 - 100 km above the earth's surface (Figure 2).

At distances of about 700 km from the transmitter, deflected waves may have a similar strength to the ground-wave, so fading usually occurs due to addition/subtraction interference between these two.

Beyond about 700 km the ionospheric (or 'sky') wave predominates. Reports suggest that daytime deflection occurs in the lower D layer at a height of about 50 km, whereas at night it occurs in the upper D layer at about 100 km, giving a

'first-hop' distance of about 1,000 and 2,000 km respectively (Reference 2). The curious are pointed to Reference 3 for a well-researched essay on LF propagation.

So, what is possible in reality? Even with the best practicable technical quality, efficiencies of significantly less than one percent may be all that is achievable.

Even so, well-made and operated European amateur stations have reportedly worked 1,000 km paths using CW Morse and super-slow Morse (QRSS3 and QRSS120), and UK amateurs have crossed the Atlantic on 136 kHz (Reference 2).

Antenna

The usual method of creating an effective ground-wave signal is with a vertical radiator, worked against a ground radial or counterpoise system. The customary model is a quarter-wave monopole, shown in Figure 3a, variations of which are a popular amateur choice for HF-UHF work.

Being a naturally resonant conductor, without need of loading devices such as coils and/or capacity hat, and where resistive losses are low, a quarter-wave vertical antenna can be a very efficient radiator. An electrically short vertical radiator is drawn in Figure 3b, showing how (it is conjectured) the displacement current produces the magnetic or H component of the near-field.

At 136 kHz, the wavelength is about 2,200 m, so a full-size quarter-wave radiator would need to be about 550 m high; hardly a practical scheme (Figure 4). For the home station though, it is generally possible to erect, or press into service, a structure of more modest size.

Two popular realistic arrangements are illustrated in Figure 5. A typical 'inverted-L' or Marconi configuration is shown in Figure 5a, where the 'shack' is near one end of the property. An existing 160 m inverted-L may well serve.

Figure 5b shows a 'T' antenna for use where the shack is near the middle of the property. It might be that the feed-line of an existing 80 or 160 m dipole can be shorted at the station end and worked against ground, in which case the feed-line must run in the clear, directly to the shack.

Real radiated power is proportional to

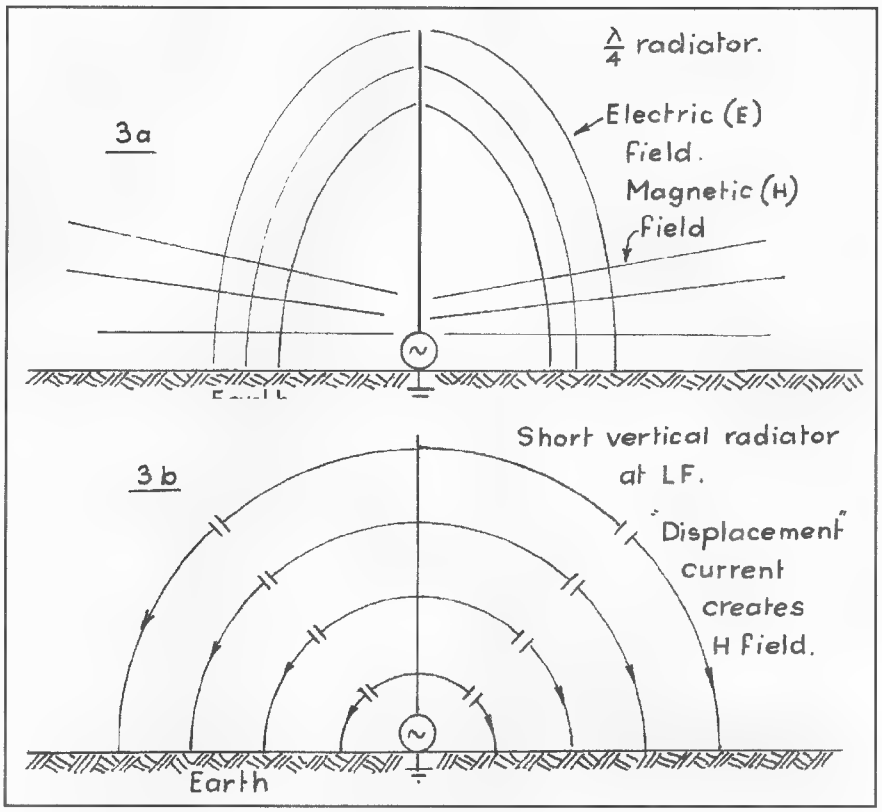

Figure 3: Both a conventional quarter wave, and a short, vertical monopole radiator.

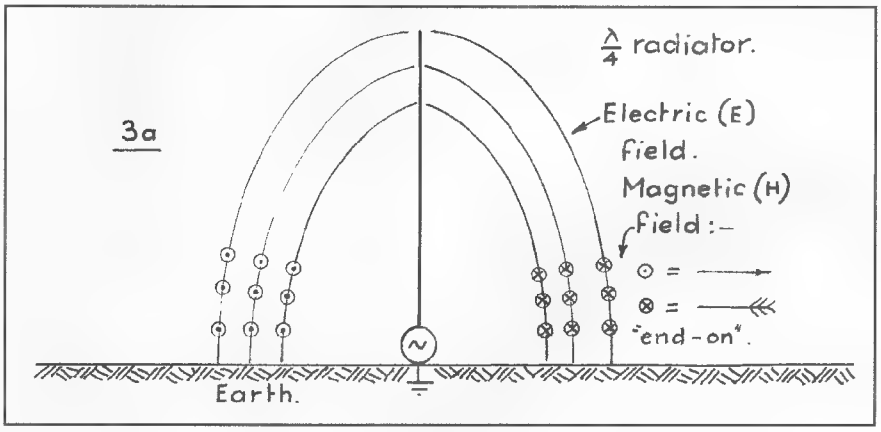

Figure 3a: A conventional quarter wave monopole vertical radiator.

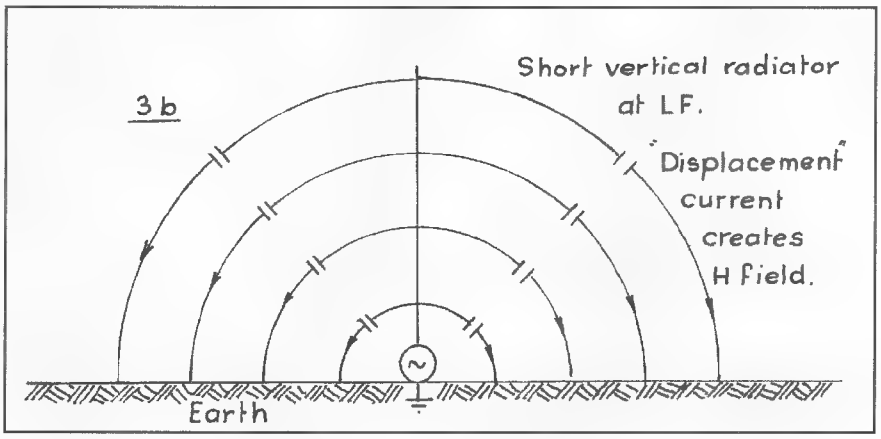

Figure 3b: A short vertical radiator at L.F.

the radiation resistance of the antenna, and inversely proportional to the sum of the loss resistances. Radiation resistance increases in proportion to the square of effective height (effective height will always be somewhat less than actual height, see Reference 4). So the amount of energy actually radiated is, therefore, proportional to height squared. Hence, it comes as no surprise that the most important dimension for an LF antenna is height.

Effective height may be improved by increasing the amount of capacitance in the top 'loading' section of the antenna (because of its closeness to ground, in terms of wavelength, little or no radiation occurs from the top section). If the top wire is made as long as possible, then effective height will more closely approach physical height - provided that the wire does not sag greatly.

In circumstances where length is limited, capacitance may be increased by using multiple wires in the top section of a T or L arrangement. Two wires spaced 1 m apart will increase capacitance by about 68 % (Reference 2).

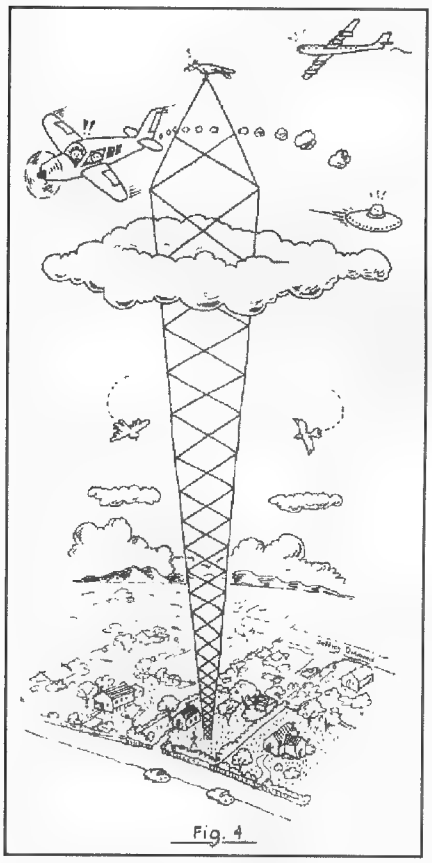

Figure 4: A full quarter wave at 136 kHz would be impractical.

The usual 'standing-wave' concept of understanding HF antennas cannot readily be applied to an extremely short LF radiator, for which it is conjectured that vertically polarised radiation is produced by the electric field established between the top wire and ground, where the resulting displacement current creates the magnetic component of the near-field. The voltage on the wire will be almost equal along its length, whereas the current will be highest at the feed point, tapering to zero at the far end(s) of the wire.

Nearby buildings, mast(s) and trees/ tree branches all come under the influence of the near-field, so the entire antenna wire must be erected so that it is well clear of metal and dielectric objects.

End insulators should be first-class and of the long-leakage path type at all support points. Also, the wire must be well insulated, and a feed-through insulator installed where it enters the shack. Figure 6 shows some potential sources of loss.

Loading coil

A 'back-yard' antenna can only be a tiny fraction of a wavelength long at LF, so the radiator is operating well below its natural resonant frequency. Consequently, a large amount of inductive and/or capacitive loading is necessary so that the system will accept power, and present a resistive load to the transmitter. The usual method is to connect a loading or tuning coil (sometimes called a 'helix') at the feed-point.

A typical circuit arrangement is shown in Figure 7a. Taps near the top and bottom of the coil allow for resonating (top) and matching into (say) 50 ohms. These two adjustments interact, so some juggling is required. A peak in thermocouple ammeter (or current transformer ammeter) reading will indicate optimum adjustment. Danger! High voltage exists near the top of the coil and along the entire antenna – keep hands well away.

Shown schematically to the right in Fig 7a is the antenna as load, where Ca is the natural capacitance (that must be resonated with our coil), radiation resistance Rrad (probably a fraction of an ohm), and all the losses (coil, wire, earth, dielectrics, insulators) bundled into Rloss.

In order to find how much loading inductance is required, we must first estimate the antenna's total natural capacitance. A workable rule-of-thumb

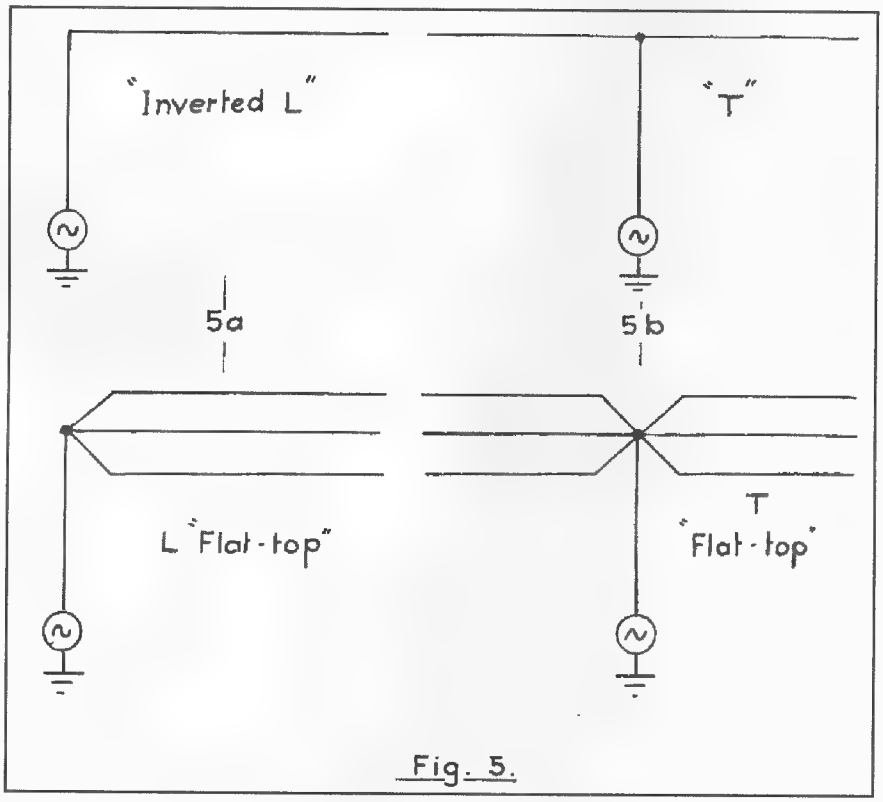

Figure 5: Two popular realistic 136 kHz antenna configurations.

for ordinary 7-strand electrical wire is 6 pF per metre for the vertical part, and 5 pF/per metre for the top, or horizontal, section (Reference 4).

Let's take my L antenna as an example. The vertical part is 12 m; 12 x 6 = 72 pF, and the horizontal part is 42 m; 42 x 5 = 210 pF. Total: 282 pF.

The amount of inductance in micro-Henrys required to resonate the antenna's capacitance may be calculated:

$$L = \frac{25330}{f^2 \times C}$$

Where:
L (inductance) is in micro-Henrys (uH),
f (frequency) is in MHz,
and
C (capacitance) is in picoFarad (pF).

$$L = \frac{25330}{0.136 \times 0.136 \times 282}$$

= 4856 uH, which is rounded to 4.9 mH.

A handy former material is white or orange PVC electrical or water pipe. My coil, wound with solid enamelled copper wire (ecw) (for best Q - avoid using ordinary plastic covered electrical wire) upon 160 mm diameter UVPC pipe is shown in Photo 1 (outlined in Reference 5). More plans for practicable coils may be found in References 2 and 3.

Variometer

Tuning by tap adjustment can be rather coarse and fiddly in practice, and it always seems that the optimum point lies somewhere between two taps. The usual ploy is to install a variometer, or variable inductance, in series with the main coil to provide incremental adjustment (Fig. 7b).

A home-made 100 micro-Henry variometer is pictured in Photo 2. The outer coil, 16 turns of 1 mm (#18 B&S) ecw, is wound upon a 50 mm length of white 115 mm diameter PVC pipe. The inner rotatable coil is 15 turns of 1 mm ecw upon a 50 mm length of 90 mm PVC pipe. The inner coil must spiral back down inside the outer coil in the same 'sense' - like an electro-magnet coil is wound, so that their inductances add.

A central hole (suggest 0.25 inch [6.35 mm]) is drilled across the diameter of both formers to admit a plastic shaft (mine is made from a #3 knitting needle) for rotation of the inner coil. Leave plenty of shaft extension so that the knob may be fitted some distance from the coil.

The shaft can be fixed into the inner coil former with epoxy or hot-melt glue (both quite good dielectric material). Use appropriate fibre washers so that the inner coil may be smoothly rotated through 90 degrees. A short length of copper braid is used to connect the inner and outer coil.

Ground

A low resistance ground connection is essential. Traditional amateur literature abounds with information on this topic (e.g. References 2 and 4). An ordinary 1 m electrician's ground rod, in moist loamy soil, located as close as practicable to the loading coil, would have a resistance of about 20 ohms (Reference 4). As the main losses are elsewhere in the system (coil and dielectrics), this 20 ohms would comprise a fraction of the overall loss, and so such a ground might be considered as a fair starting point. However, extra rods inserted close by, and an additional connection to the house metallic cold-water system, all bonded together with stout copper wire or strip, would be an advantage. My shack is located on stony soil, so the bottom wire of a long post-and-wire fence has been pressed into service at present.

Receiver

Most recent model transceivers provide general coverage down to perhaps 100 kHz. Unfortunately, some examples give far less than adequate performance on LF. The usual problem is front-end overload from local AM broadcast stations, which pop up everywhere through the LF band.

Sensitivity may be severely reduced too. When receiving on (say) the main transmitting antenna, an enormous

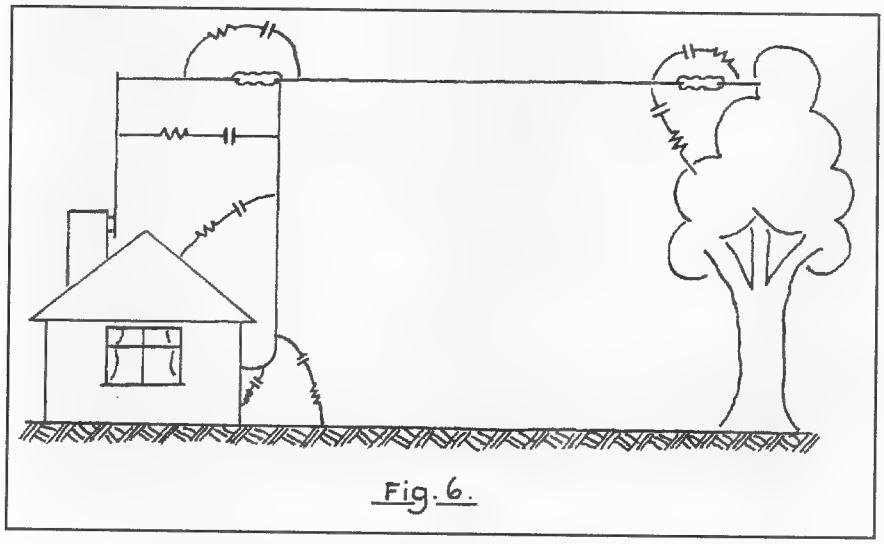

Figure 6: Some potential sources of loss.

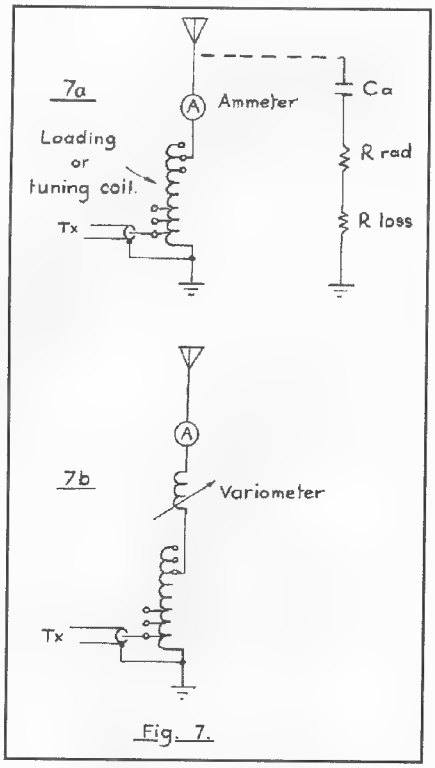

Figure 7: Examples of some typical antenna circuit loading arrangements.

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amount of LF and MF broadcast energy is presented to the receiver, along with a galaxy of spurious harmonics and noise from nearby domestic appliances.

Generally, a loop-stick or wire loop antenna ahead of either an LF converter, or LF pre-amplifier, will give much better results because, in most instances, the loop may be aligned so that the worst of the noise is 'in the null', leaving the wanted signal substantially unaffected, and the Q of the tuned loop imparts a high degree of front-end pre-selectivity. A simple, but quite effective, LF converter was described in Reference 6.

References 2 and 4 have ample information on receiving techniques. See also Joseph Carr's technical note #8 on his web-site (Reference 7). Look out as well for any articles from Richard Q Marris G2BZQ, Britain's 'Receiving Loop Man'.

Transmitter

Our maximum permitted effective radiated power is 1 W (Reference 4 has useful formulas for calculating this).

Considering the poor efficiencies involved, it is unlikely that a home-station antenna will radiate anything like this level of power, so it is suggested that about 50 to perhaps 500 W transmitter RF output will be required.

My own puny 50 CW transmitter (outlined in Reference 8) might make a good 'starter' project, and would find use as a 'driver' for a more powerful job. Numerous plans are detailed in References 2 and 4. Do also explore the 136 kHz technical web-site (see Reference 9) where may be found a large collection of related material.

Measuring Equipment

The thermocouple ammeter has already been mentioned for measuring antenna current. Due to their fragility, though, good examples of these are becoming increasingly rare. Yet it is very useful to be able to measure RF current, so consider making a current-transformer type meter. A simple project was outlined in Reference 10.

An ordinary strip-line SWR meter, though fine for HF and VHF work, would be useless at LF. A better pattern is the current transformer SWR bridge of the type outlined in Reference 11.

References and Further Reading

1. *Two Hundred Meters and Down – the story of amateur radio*: DeSoto, ARRL.
2. *LF Today - A Guide to Success on 136 and 500 kHz*; Dennison and Moritz; RSGB Publications.
3. VK3ACA's Medium and Long-Wave Page: http://member.melbpc.org.au/~jadcock/
4. LF Chapter 10, *Radio Communication Handbook*, 9th edition. RSGB Publications.
5. "A loading/tuning coil for 137 kHz antennas"; *Amateur Radio*, November, 2008.
6. "An LF Converter with loop-stick antenna"; *Amateur Radio*, July, 2008.
7. www.dxing/tnotes.htm
8. "A 50 W CW Transmitter for 137 kHz"; *Amateur Radio*, September 2008.
9. www.qsl.net/on7yd/136brew.htm
10. "RF Ammeters for high-frequency measurements"; *Amateur Radio*, November 2004.
11. "A combined MF-HF SWR meter and RF ammeter"; *Amateur Radio*, April 2008.

*In the 1970s, a group of amateurs, John Adcock VK3ACA/AX35T35; Peter Forbes VK3QI; Don Bainbridge VK3IT; and Dennis Sillot VK3WV did some noteworthy experimental work. Their efforts were reported in *Amateur Radio* for July 1984 titled: "Experimental Stations on 195 kHz". More recently, Robert Miln VK7ZAL/AX2TAR, has carried out some heroic exploits on and about 177 kHz. See also receiver and transmitter plans published by Lloyd Butler VK5BR.

Editor's Note: Advanced licence holders can apply to the ACMA for a variation in their licence so that they can operate on a secondary basis on the new band. Until such time as the LCD is updated, the band is only available to those who request the licence variation. Full details can be found on the WIA website at: http://www.wia.org.au/newsevents/news/2009/20090611-1/index.php

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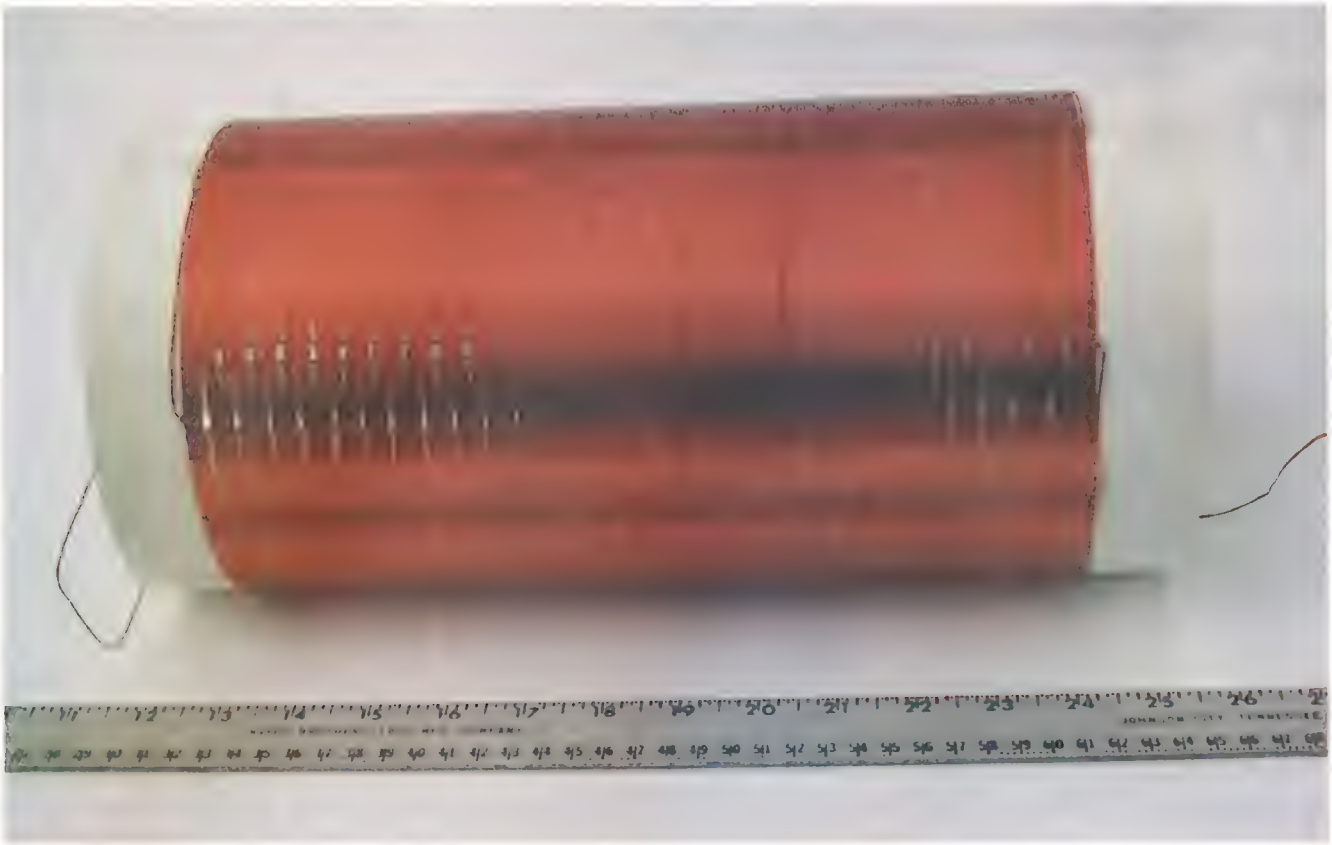

Photo 1 My antenna loading coil, wound with solid enamelled copper wire upon 160 mm diameter UVPC pipe.

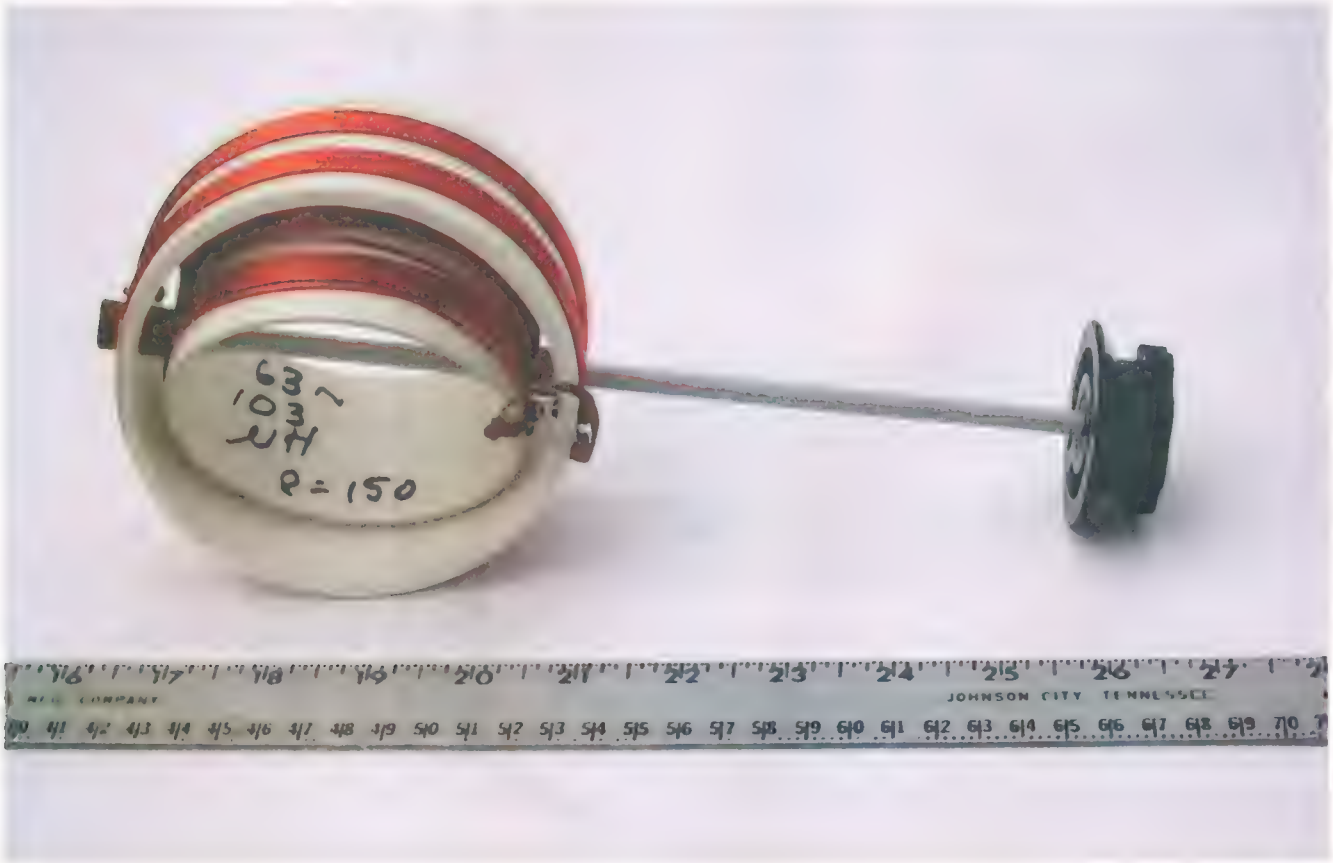

Photo 2: A home-made 100 micro-Henry variometer.

Foundation Corner One

The two metre J-pole

Ross Pittard VK3CE
vk3ce@amateurradio.com.au

Following an appeal by the Editor of *Amateur Radio* magazine, Peter Freeman VK3KAI, for volunteers to write some articles suitable for and of interest to Foundation licensees, I have started writing an occasional column devoted to basic hints and ideas particularly suited for those just starting out in our hobby.

No claims for originality are made and a fair amount of what we will be discussing is already available in books, magazines or on the internet.

A number of readers will be aware that Amateur Radio Victoria has been running its original F-Troop Net following the Sunday morning WIA broadcast on VK3RMM 2 metre repeater for the last three years.

This net is primarily designed as a forum for new licensees to come on air, ask questions and hopefully gain experience in their new hobby. I have been one of the three net controllers since its inception.

Over the coming months it is hoped to review various topics that have been discussed on F-Troop in the past.

One of the most common questions new radio amateurs have asked is a design for a 2 metre antenna, as this band is, for many, the first they use. I do not claim to be an antenna guru but from my past experience the following is probably the easiest to construct.

A simple 'Slim Jim' or 'J-pole' two metre band antenna

Slim Jim, originally described by Fred C. Judd G2BCX, is very simple to construct, vertically polarised, requires no ground plane and has a low angle of radiation.

Its radiation is mostly parallel to ground toward the horizon, giving some gain and making it a better performer that a ground plane antenna. The Slim Jim is a half wave end fed folded dipole while the J-pole is a half wave dipole; both variants are fed by a quarter wave stub.

The origins of the J-pole go back to the Zeppelin German airships which used this type of dipole as a trailing antenna. It was later adapted for amateur radio purposes.

The original Slim Jim article described construction of a 2 metre version made from aluminium tubing. The most cost effective method of construction I have found is to use a piece of 300 Ohm TV ribbon transmission line cut to the required length, with the ends shorted together – refer Figure 1.

All that is required to tune either antenna is an SWR bridge at the transmitter end and adjust the coax up and down to get the best match. An SWR of less than 1.5 should be easily obtained. Various construction

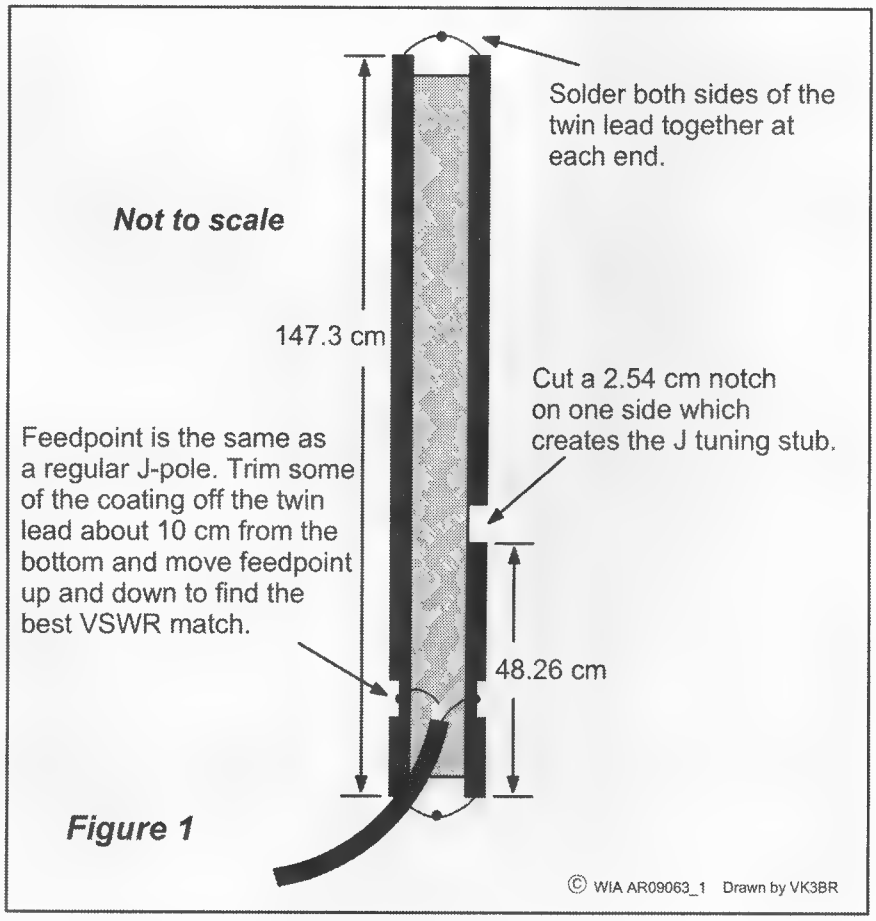

Figure 1: Diagram of the Slim Jim constructed from TV twin lead.

ideas have been used over the years for these antennas including copper wire taped to a broom handle, the ribbon as described mounted inside a PVC tube, a 'plumber's delight' made from copper pipe and elbows and last but not least, aluminium tubing as per the original design. The antenna works equally well when scaled and cut for the 6 or 2 metre band, or 70 cm.

As a base station antenna the author uses a J-pole – refer Photos 1, 2 and 3, made from copper wire taped to a broom handle which slides easily into a TV hockey stick mount and is covered with PVC pipe for weather proofing.

For a more detailed explanation of the theory behind the Slim Jim and J-pole plus an online calculator for dimensions of both antennas I suggest having a look at **http://www.m0ukd.com/Slim_Jim/index.php**

For many years when I was working away from home I had a TV ribbon Slim Jim rolled up in the bottom of my bag with my 2 metre hand held. They certainly out-perform the rubber ducky antennas as supplied with most hand held radios.

That is all for this month and if anyone has any questions or ideas for the column please email the editor or myself.

Photo 1: The 70 cm J-pole version with PVC cover.

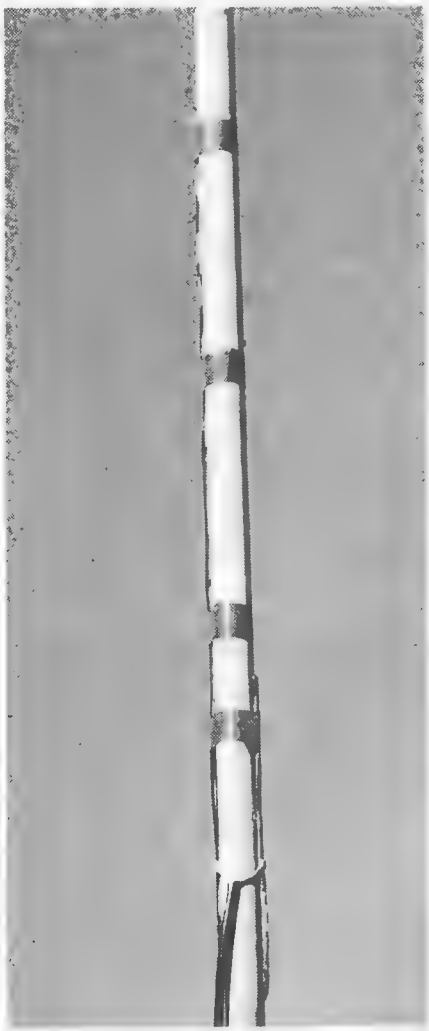

Photo 2: The 70 cm J-pole with the PVC cover removed.

Photo 3: Close up of feed connection.

Reference

Fred Judd G2BCX, Slim Jim 2 metre Antenna, from Out of Thin Air, published by Practical Wireless 1980.

A copy of the original article can be found in the download section of my web site. http://vk3ce.no-ip.info/

ar

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Some adventures in antennas

Peter Carter VK3AUO

I once went on a holiday to the other side of the continent, namely to Perth. I bought a new helically wound antenna to work 20 metres back to Melbourne. I also had with me an antenna with a set of screw-on coils to use on all bands; that is, a top loaded system. When the top loaded system came up with something in the order of one and a half to two S points ahead of the helical, I relegated the latter to the dustbin.

Back home, I need to run an efficient mobile whip on 80 metres for RECOM emergency operations.

This is a demanding exercise given that the short vertical has a low radiation resistance of about three ohms. The radiation resistance is in series with the resistive losses in the loading coil and the earth return circuit, so that only a tiny percentage of the input power is effectively radiated.

The best that can be done is to maximise the length of the high current area which means that the best results are likely to come from a top loaded system. Photo 1 shows a top loaded antenna that performs well. But there are trade-offs: the further up the antenna the loading coil is placed, the higher the inductance that is required, the bigger the resistive loss and the larger the weight on top. As a guide to inductance, the ARRL handbook gives detail of inductor values for centre loaded whips.

Photo 1: The top loaded antenna deployed

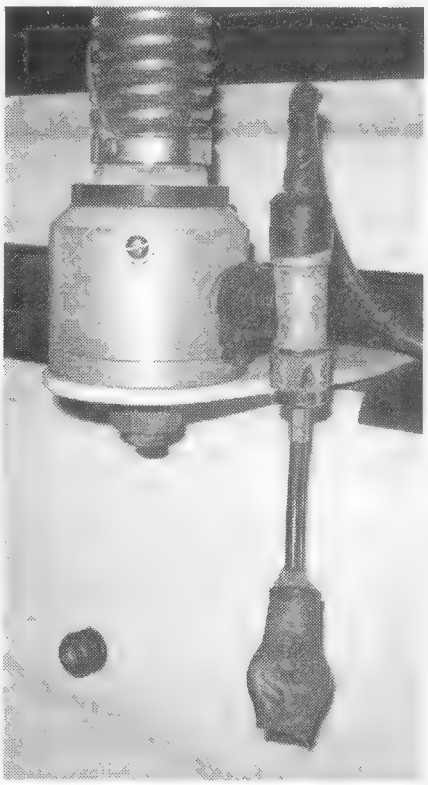

Photo 2: Matching capacitor connected via coax T-piece

Matching

There are three common ways of matching a mobile antenna to the 50 ohms output of the transmitter and the coax feed line.

These are: a tapped coil at the base, a tapped ferrite transformer or an L match.

An L match is mechanically straightforward and is simple to get going. L matches can be used to match resistances from low to high, or high to low. A short vertical antenna will present a load of about 30 ohms. The L match requires two components, an inductor and a capacitor.

If the capacitor impedance is connected to earth then the inductive element can be incorporated in the inductance of the antenna itself, and is adjusted when tuning to resonance. So adjusting the capacitance to earth is the only component that is of concern. This can be assisted by calculation or by trial and error.

The capacitance required for an 80 metre whip will be in the order of 1000 to 2000 pF. An antenna analyser makes tuning a simple process. A good method of applying the capacitance is by using a screw-on to a coax T-piece as shown in Photo 2. This can be changed for different bands.

Some Traps for Young Players

The voltages at the top of the loading coil and at the tip of the tuning stub are very high.

Photo 3 shows the burns which resulted from not cleaning the inside of the coil former, so that accumulated dust collected a little moisture and was sufficient to provide a current path.

Another trap is that a sharp tip on

the tuning stub can result in corona discharge, upsetting any hope of achieving a 50 ohm load as seen by the transmitter.

Once arrived at a destination, there is a need to work 80 metres portable. To increase the length of the antenna over and above a mobile whip gives an obvious advantage and this is usually done using a squid pole, supported on a tripod.

A dipole is an option but requires a lot of space on the lower frequencies and is an embarrassment in public places.

Another is a long wire to a tree or some such object. If the long wire is shorter than a quarter wave, then it will present a load less than 50 ohms so that an L match with the capacitor leg to earth is appropriate. The vehicle provides sufficient earthy counterpoise in each case.

Ferrite Rod Tuning

A useful way to resonate a single ended system is to use a coil as part of an L match and vary the inductance with a ferrite rod.

A coil wound on a poly water pipe of 40 mm OD, with 23 turns over a length of 50 mm, was on hand, the inductance approximating 12 μH.

With a broadcast band ferrite rod which can be bought for less than $2, it provided a comfortable range of inductance to readily tune a considerable range of long wire or vertical lengths.

A tap in the centre of the coil is required for 15 metres, or more, of long wire. Photo 4 shows a prototype matching unit.

As a starting point for constructing such a system using 15 metres of long wire, 1000 pF of fixed capacitance plus a 500 pF variable provides for the earth leg. Using an SWR meter or an antenna analyser, it is a straight-forward process to arrive at an accurate match.

An MFJ Antenna Analyser or the kit from the South Coast Amateur Radio Club in SA (see Hamads) makes such fiddlings a breeze!

Investing in this approach may well be a better option than purchasing commercial T match units or automatic matching units which, in the lower frequencies, can introduce quite severe losses.

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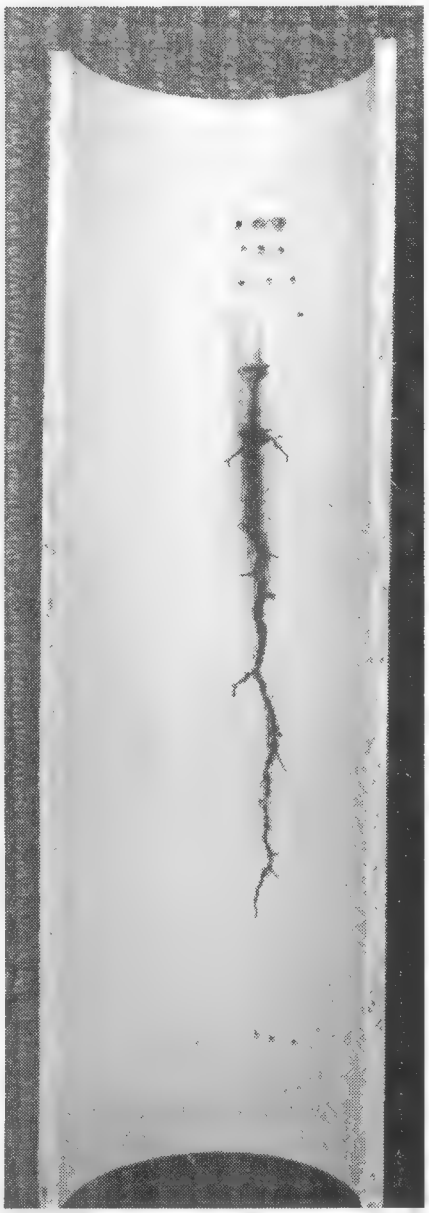

Photo 3: Burn on coil former

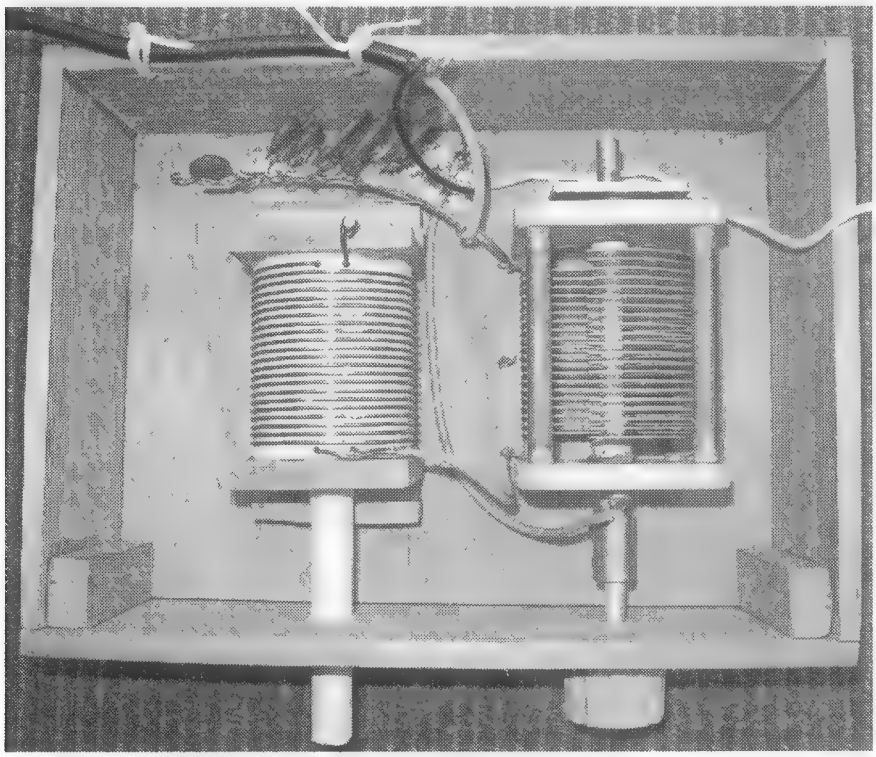

Photo 4: Prototype L match

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IEC plugs and sockets – an EMI filter adapter

Lyle Whyatt VK5WL

My desire was to provide an EMI filter in a 240 volt lead to determine if RF was entering some equipment. My choice was to use an IEC chassis socket with EMI filter (Altronics P6352A, Jaycar MS 4003) as part of a normal Australian plug/socket arrangement. The final product is shown in Photo 1.

Aside from using many pieces of equipment with the IEC plug/socket/leads, I had not taken a lot of notice of the polarity of the active and neutral pins and certainly had not committed to memory which was active when looking at the socket (female). One may be "helped" in this task when using the EMI filter sockets because they usually have a wiring diagram on the label including component values and conductor letters (A & N or L(oad) & N).

However not all labels will correctly indicate the active and neutral through the filter.

Photo 2 shows two filter sockets (Canny Well brand) with the wiring detail at right angles to the line through the filter. No help! But please note the different component values because one is a 10 A unit and the other is the more normal 6 A variety.

Photo 3 shows two filters (TSC brand) with the diagram 'in line' with the pass through wiring of the filter. One is supplied with wire tails, the other with connector lugs. Now look at the labelling of the A & N conductors! The unit with coloured tails is labelled and wired correctly. The unit with the lugs is wrong, with A & N transposed on the label.

Photo 4 shows the pin arrangement used in Photo 3 has the earth pin (centre) uppermost for both filters.

Be WARNED.

Do not trust the 'wiring details' on these filters to truly identify Active and Neutral connections. Always connect the filters according to the standard configuration for these IEC plugs and sockets.

I decided to commit to memory the arrangement of pins with the IEC plugs/sockets. This is simple for us Australians

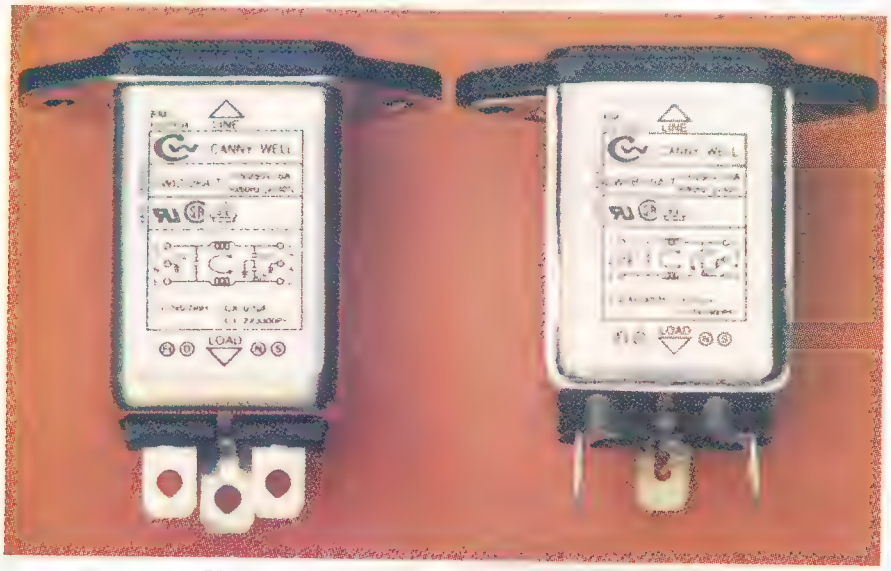

Photo 2: Two IEC filter units with poor marking.

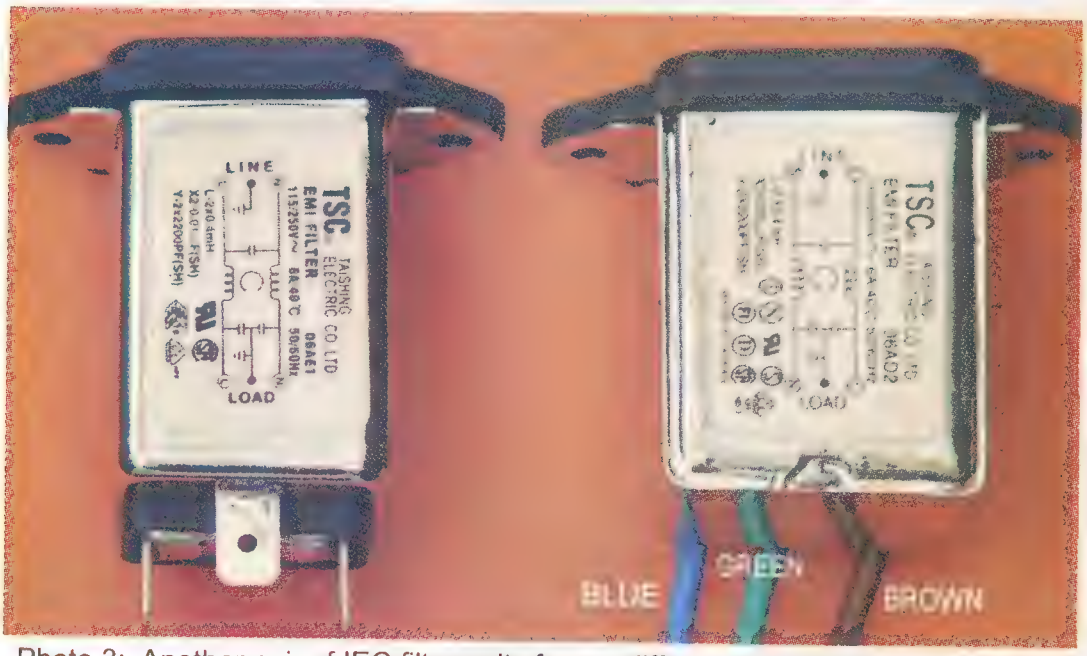

Photo 3: Another pair of IEC filter units from a different manufacturer. Again, it is easy for the unaware to be confused – see text.

where the *socket* (when viewed with the earth pin lowest) is as shown in Photo 5. Active on the left and Neutral on the right. The IEC *sockets* are just the same – Active on the left and Neutral on the right with the earth pin lowest.

Or looking at the *plugs,* again with earth lowest, Active on the right and Neutral on the left for the Australian and IEC plugs as shown in Photo 6.

Having originally put together my adapter device, using incorrect TSC filter unit wiring, I tested it with the little three-light tester (Jaycar QP2000 or similar) and found it had the active and neutral reversed. This discovery led me to think of the fallacy of accepting manufactured marking and items as being always correct, and your safety, or lack of it, when using these non-Australian Standard components.

I would recommend two things:

Always test any extension lead/device you make with the three light tester or similar device.

Learn, and commit to memory, the layout of Active and Neutral connections for both *plugs* and *sockets*, which applies to both Australian and IEC components. **ar**

Photo 4: The two units from Photo 3, viewed from the opposite end

Photo 5: A simple way to determine the correct pin designations for sockets.

Photo 6: The correct pin designations for plugs.

Photo 1: The final assembled IEC filter – mains adapter.

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News from

VK2

Orana Region Amateur Radio Club at "The Dish"

Saturday 18 July and Sunday 19 July 2009)

Ross VK2WN reports on the dish:

I got to the Parkes Radio Telescope on the Saturday at about 8 am. It did not take too long for me to meet up with other Orana Region ARC members. They were David VK2CDH and his XYL Lyn VK2FLYN, James VK2LQZ and XYL Petria VK2FERE, Reg VK2TRE and his XYL and Ken VK2AGW.

It was beautiful and sunny with almost no wind but the temperature was quite cool. People were already lined up and ready to do the telescope tour.

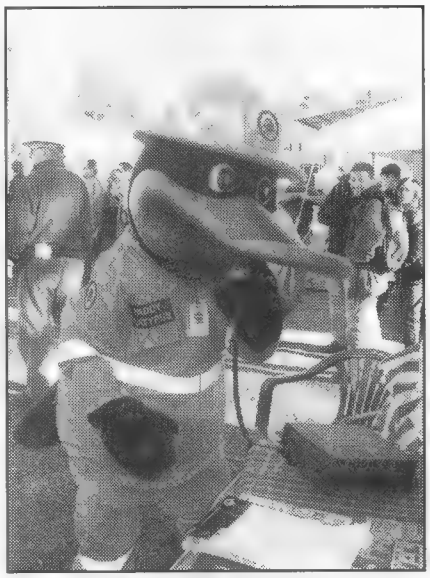
In the process of setting up we had to walk past the people lined up as we carried the radio-related gear from the car park. I had done the tour a couple of times in the past few years so was not particularly interested in it and besides today was about celebrating the Parkes Radio Telescope's involvement in the moon landing 40 years ago and the promotion of Orana Region Amateur Radio Club.

Parkes is an important place for me for a number of reasons. Firstly it was where I was born 44 years ago and secondly because I now live only 90 kilometres north of there at Narromine and have done so for almost seven years.

The Parkes Radio Telescope opened its doors for the weekend of 18 and 19 July, to celebrate the 40th anniversary of man walking on the moon.

Over the weekend, they welcomed 6,500 visitors. Many enjoyed a tour of the telescope, helicopter flights, and staff on hand to explain the trial Square Kilometre Array telescope destined for outback Western Australia.

On Saturday, the queue for the telescope tours was 300 metres and three hours long, right past the ORARC stand. The "captive" audience was treated to conversations with David KE5YGI from Houston Texas USA, via 2 metres IRLP, as well as local chatter on 2 metres. Even Paddy Platypus, the local SES mascot, was in on the action (Photo 1). David, Lyn, James, Reg, Ken and Ross enthused about the hobby to anyone who would listen.



Paddy Platypus, the local SES mascot, was in on the contact action to Texas. Was it KE5'Charlie Coyote" on the other end?

Meanwhile, Petria VK2FERE and James VK2LQZ had five of the One Laptop per Child computers available for hands on exploring, including testing the capabilities of the laptop's antennas (Photo 2).

Thanks to David VK2CDH for organising the event. He did such an impressive job that he was elected Club President at the AGM the following weekend. Congratulations!

Thanks to the Parkes Radio Telescope for inviting the Club, and for giving us permission to transmit.

Photos by David VK2CDH

One Laptop per Child computers, available for hands on exploring, including testing the capabilities of the laptop's antennas, were a great attraction.

More VK2 news on page 30

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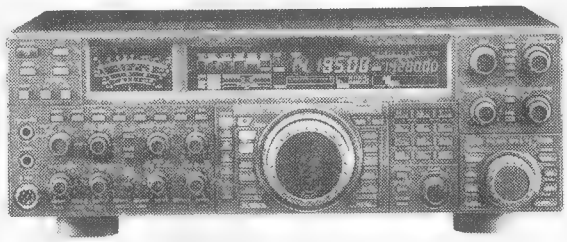

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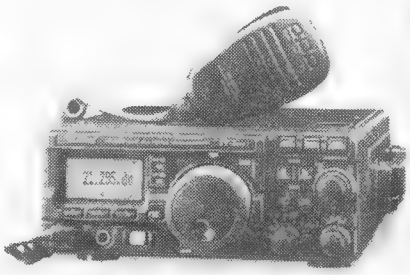


FT-897D All Mode 1.8-430 MHz Transceiver

Silent Key

Richard (Dick) Bedford Leslie Adams VK3LN (VK3ADA) Aged 80

14 October 1928 to 24 February 2009

Dick was born in Brighton and after his Mum died when he was seven years old, he moved to Glengarry to live with his aunt. It was during the stay at Glengarry that his appetite for country life, hunting and shooting was born.

He later returned to live in the Brighton family home until 11th December, 1945, when at age 17 he joined the Royal Australian Navy.

By October 1946 he had completed his Telegrapher's Course and received his first posting to HMAS Harman, a land based communications station in Canberra. Three months later he was on the Hobart, where he spent 10 months as part of the Japanese Occupation Force.

Dick's eleven years service in the RAN is strewn with berths on many ships, including a brief stint attached to the Royal Navy on HMS Glory, whilst awaiting his posting to HMAS Sydney at the end of 1948.

January '51 saw him back at HMAS Harman for seven months, before rejoining the Sydney again, this time seeing action during the Korean War.

Several ships (and years) later, Dick came ashore and served as a Telegraphy Instructor, until paying off for the last time at the end of 1957.

Navy life had suited Dick, he enjoyed the challenges and the companionship that he was presented with at sea.

He entered and remained in the electronic industry after leaving the Navy.

Using his wireless and electronics expertise gained in the service of his country, Dick quickly moved into the rapidly expanding television industry, working for several leading companies, including Sharp and Philips.

A couple of addresses later saw Dick and Barbara settled in at Wellard Road, Box Hill South, and from that address they shared many adventures.

Both had a love of jazz, family life and country trips.

These country trips included many jazz concerts, but were sometimes used for scouting sorties as far as Dick was concerned, he was always on the look out for new dams and lakes that might offer up a duck or two, during the official season of course, or somewhere new to throw in a line.

Emphysema caught up with Dick 20 years ago and he was forced into early retirement, but his enthusiasm for wireless and the latest electronic gadgetry continued unabated.

He joined our Club and was a very active member until the emphysema began to really take its toll.

Dick was very generous with his time, especially helping and coaching those with an interest in learning CW.

He was also a very stubborn and proud man, who continuously rejected offers of help with things like his oxygen bottle, which had become a constant companion over the past couple of years.

Up until recently he was still enjoying the Friday lunches, and the camaraderie that went with them, at the Knox Club.

Dick is survived by his wife Barbara, numerous children, stepchildren and a large extended family.

Dick will be sadly missed by those of us who knew him, and called him friend.

He will be remembered by his country for services rendered during the Occupation of Japan and the Korean War.

Fair winds and high tide on your final voyage Dick……

Rest in Peace.

Carl Schlink VK3EMF, EMDRC.

Sods Law

The twelve steps in understanding Sods Law for transmission lines and wire antennas

R Johnson VK5ZRJ

1. **A single length of uninsulated plain wire of any metal will inevitably develop a kink.**
2. **A single length of insulated wire or coaxial cable will inevitably develop a knot.**
3. **Two or more lengths of any cable or wire will, if in close proximity, invariably mate and be impossible to separate without knots or kinks.**
4. **All coaxial cable is invariably 4 inches too short to reach where it was supposed to.**
5. **All RF connectors have an intermittent fault.**
6. **All coaxial cables have a break or short somewhere along their length.**
7. **The above two faults do not become apparent until installation is complete.**
8. **When calculating antenna or line lengths the speed of light is a variable.**
9. **Transmission line efficiency is inversely proportional to the number of times you close the car door or mow the lawn.**
10. **All coaxial cable is invariably supplied with the wrong connectors.**
11. **Characteristic impedance is a myth.**
12. **SWR bridges are fine going forward, but if you try to go back, they're burnt.**
13. **It is impossible to raise a wire antenna into the air without bringing the ground up with it.**

VK2HRX/p Mt Kosciusko summit, Easter 2009

Compton Allen VK2HRX

Since getting my licence a few years ago I have always been interested in portable and mobile operation. The opportunity arose in conjunction with a family Easter camping trip to Jindabyne to try some portable operating on the summit of Australia's highest mountain Mt Kosciusko, at 2229 metres altitude. Before I loaded up the pack and headed up the track there were a few things to plan for. What frequencies to operate on, what modes and what radio, antennas and batteries.

I knew from talking to others that operating on Kosciusko was fairly common but I guessed that most did it with a hand held. So I thought I would try for something a bit more substantial.

I chose to take a Yaesu FT-857D to give me all modes and all bands with reasonable power and I coupled that with 12 V 18 Ah SLA battery and a Tokyo High Power Labs HC-100AT tuner.

I have previously used this battery for QRP operation for at least four hours. I calculated that I would get close to two hours use from it at higher power. As this was about the time I had to spend on the summit this seemed OK. Anderson power poles and a four way manifold made setting up very quick and easy for the power connections.

For antennas I took an Arrow 2 metre/70 cm crossed Yagi as described at http://www.arrowantennas.com/146-437.html It is a delightful antenna to use hand held as it is light and I have made a canvas roll bag for it so each of the elements and boom have their own little pouch to protect them when being transported.

This proved to be excellent and was easy, of course, to change from vertical to horizontal polarisation. I bypassed the 10 W duplexer built into the handle and connected the feed line from the radio directly to the 2 metre element. My son, Taylor VK2FTEC, made a great voice controlled rotator.

For HF I wanted to operate on a few bands so I chose a G5RV. To erect it I used a squid pole. My squid pole is around 7 metres so I selected the ½ size G5RV which has a feeder line length of around 4.6 metres. Using a 300 Ohm feeder on a G5RV means the feeder is slightly shorter than if using a higher impedance feeder, so this was a useful consideration as I was planning on erecting it as an inverted V in a treeless location. The ½ size G5RV works on 40, 20 and 10 metres with a tuner. As I was operating during the day not having 80 metres was not an issue. So I built the one described at http://www.jackclarke.net/g5rvhalf.htm

There are two ways up to Kosciusko on foot, via Charlotte's Pass and from the top of the chair lift that departs from Thredbo. The Thredbo route is about 5 km shorter for the round trip and the height to climb is also less, so I managed to convince the rest of the group with me that we should make the trip from Thredbo.

Total distance is 13 km for the round trip and the height to climb is only a few hundred metres. I gave myself two hours each way for this, which was about right. If you did not stop to look at the views then you could do it comfortably in 90 minutes each way. Mt Kosciusko is more of a bump or mound than a mountain peak which is what makes it so popular, that and the raised steel mesh track for 95% of the way.

In good weather it is an easy walk. If the weather clouds in or worse then it would be a serious walk especially if you are not well prepared. It is important to get back to the top of the chair lift for the trip down by 4:29 pm as it is an additional 5 km walk down the range if you get there after the chair has stopped.

The trip up the chair lift was pleasant. I chatted away to my daughter Courtney VK2FUNI about the nature of the vegetation as it changes from sub alpine to alpine around the top of the chair lift, which means there are no trees of any sort on the summit.

So having got myself and all the gear up there it was time to get on air. I had to move away a little to get a spot to set up so I was safely away from the others sharing the top of Australia. I started out on 2 metres and looked around with the 2 metre beam to see what repeaters I could access using 20 W. I started to write them down but there were so many I gave up. This would be a great place to try repeater DX.

I did work a VK5 via a repeater in Western VK3. I was also able to access the High Range repeater near Mittagong, south of Sydney. This repeater gives good coverage though Sydney so I could have easily had a QSO with the VK2's in Sydney.

Next was 2 metres at the bottom end of the band, on 144.100 MHz USB with 50 W, and swinging the beam around. I was able to make a few contacts into some local VK2s and VK3s in SE Victoria.

Then I erected the G5RV. Two wires fitted with plastic insulators were simply pulled apart and then tied to a rock on the ground with a short piece of nylon cord. These helped to hold the squid pole up to support the feed point, as high as was possible. The bottom of the squid pole was simply wedged into some of the many rocks on the ground.

G5RV as inverted vee using a squid pole.

I then tuned up the G5RV on 40 metres and called CQ on 7.070 MHz. I got an immediate response from stations far and wide! Having an S0 noise floor meant I could hear all of them. I spent the next 30 or so minutes working my way through every one who wanted to make contact with a station on the top of Australia, until my battery finally went flat.

The ranger took a triple look at the squid pole on my pack when I met him on the way back down. He told me he estimated 1,500 people had walked to the top that day, with around two or three hundred people on the summit at any one time; a constant stream of people.

If I were to do this again I would definitely take a second battery and I would use lower power. I suspect the 100 W on 40 metres was far more than required, as I was getting 59+ signal reports from nearly everyone.

It would also be interesting to also take some high band gear and try, say, 23 cm or higher. One station asked if I had anything higher than 2 metres to try, which got me thinking. The Icom IC-910H would not be that hard to put safely in a pack. So I guess I would also need a larger pack than a day pack.

I would also plan to be on the chair lift as soon as it opens to maximise the available time on the summit and to give myself some time to try some other HF bands. I am sure CQ DX on 20 metres from the top of Australia would be attractive to many. There were a couple of people flying some large kites very successfully. Now there is an idea for the HF antenna next time!

For all those who contacted me thanks, you are in my log and I look forward to working you when I am again portable somewhere interesting.

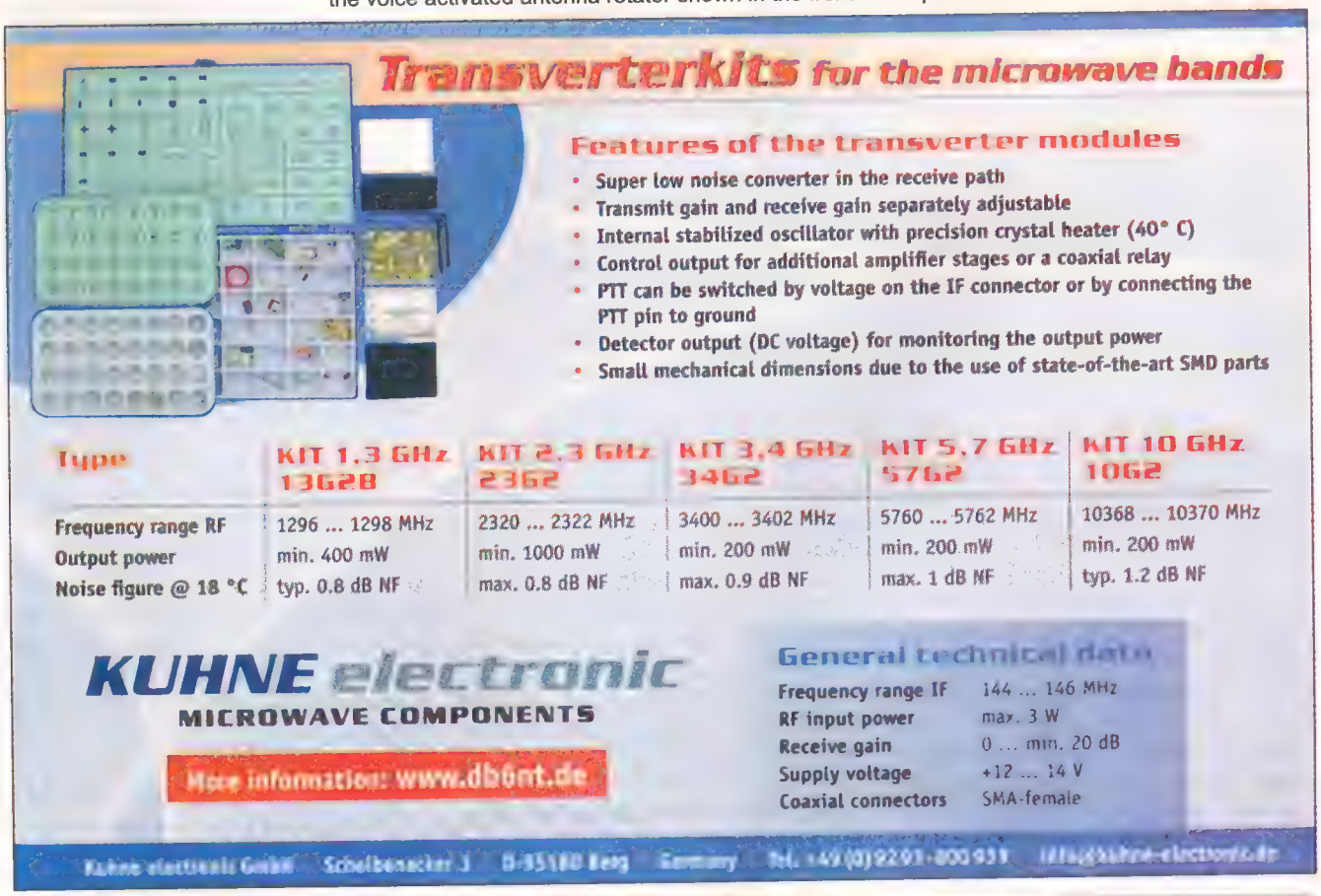
ar

On air on 2 metres SSB.

Protecting the radio head and microphone in the pack.

Looking towards VK3 land.

The portable set-up: antennas, radio, tuner, power and pack. Note especially, at about 5 o'clock in the photo, the power pack for the voice activated antenna rotator shown in the front cover picture.



News From

Tim Mills VK2ZTM
arnews@tpg.com.au

VK2

The **Summerland ARC** has just finished a month of celebrating their 50th anniversary which included use of the special call VI2SRC50. Also during the month they held a dinner and conducted SARCFEST and held courses and exams for all licence grades.

The **Fishers Ghost ARC** is preparing for the next Jamboree to be held during January 2010, advises their President Wal Kelly VK2ZWK. The FGARC are the caretakers of the Amateur Radio Shack located at the Cataract Scout Park – the site for the Scouting Australia Jamboree – AJ2010. The Jamboree is from 4th to 14th January. Amateur operation is being planned for all bands between 80 metres and 70 cm. Fishers Ghost is seeking expressions of interest from Clubs and their members from in and around Sydney to assist during the daytime. If you can help, contact Wal on vk2zwk@wia.org.au or telephone 02 4626 8423.

The **Oxley Region ARC** held their AGM at the beginning of last month. Incoming office bearers are President Henry Lundell VK2ZHE and Jim Neil VK2VIV as Vice President. No one put their hand up for Secretary so Jim VK2VIV, the outgoing Secretary, will act for the moment. Treasurer is John Bailey VK2KHB and committee members are Alan Nutt VK2GD, John McLean VK2KC and Bill Brooke VK2ZCW. ORARC meet on the first Saturday afternoon and the fourth Friday evening at the SES building in Central Road, Port Macquarie. They conduct Foundation and Standard training courses in both Port Macquarie and Wauchope and interest in attending can be registered by mail to P. O. Box 712 Port Macquarie NSW 2444. Check out their web site at www.orarc.org

In late June Foundation exams were conducted in the **Orana Region** in VK2's Central West with many attending the weekend.

The **Hellenic Amateur Radio Association** conducted a DXpedition to Norfolk Island in late July. The week long operation logged over 12,000 contacts on all bands from 160 to 10 metres advised team leader, Tommy VK2IR. There was also operation for a day in the RSGB IOTA contest, netting some 650 contacts. HARA meet at the St. George Sailing Club in Sans Souci (Sydney) and contact can be made with VK2IR on 0413 005 511 or check the web site www.haraoa.com The next trip being planned is to Broughton Island OC-212 late this year.

NSW WICEN has upgraded their website to allow members to have access via their own callsign and a password. Contact Webmaster Mark Cheeseman VK2XGK or the Secretary. Some activity coming up could include this month (19th) in the Kangaroo Valley. In October there is the annual search for the missing aircraft VH-MDX over the weekend 17/18th and the Hawkesbury Canoe Classic the following weekend. In November, Hunter Region is to provide safety communications to the Great North Walk on the weekend of the 14th and 15th. Contact with NSW WICEN is via the Duty Operator 0408 397 217 or email to operations@nsw.wicen.org.au

The **Blue Mountians ARC** held their annual Winterfest last month at their new meeting location, the Nepean VRA in Orchards Hills (near Penrith). By the times these notes appear some members of the Club will be on a DXpedition to Poeppel Corner, advises John VK2QN, from August 29th to September 12th. Poeppel Corner is in the Simpson Desert where VK4, 5 and 8 intersect. The DXpedition has been named "PC-09". They will be using HF, and satellite gateways back to a central computer so you can follow their progress. There is also HF contact to base stations located in Melbourne, Sydney and Brisbane. For all the details go to the BMARC web site www.bmarc.org/pc-09.php

August must be AGM month for besides **Oxley Region** on the first Saturday, there was the **Mid South Coast ARC** on the second Saturday and the **Illawarra ARS** on the second Tuesday.

The **Hornsby & District ARC** regularly conduct exams in Sydney's north. Details on their website www.hadarc.org.au They have recently added twitter to their information sources – check out www.twitter.com/VK2MA

St George ARS have added a SSTV segment at the end of the Thursday evening net on VK2RLE 6800.

Hunter Radio Group meets at NBN Television in Newcastle on the second Friday evening. They also provide a Monday evening news net with segments of VK1WIA and VK2WI content.

The **IPS Radio & Space Services** are conducting their annual Sydney HF Radio Propagation Course on September 3rd. These are also conducted in other capital cities – check out www.ips.gov.au/Products_and_Services/2/2 or 02 9213 8034.

Half a year to the **Central Coast** field day at Wyong on Sunday 28th February 2010. The CCARC are seeking assistance with the operations on the day, advised Ray VK2HAY. Ray advised that they can fit in more "Flea Market" Stall Holders, so now is the time to make your move. They will be announcing other attractions later.

The next **ARNSW** Trash & Treasure is the last Sunday of this month (27th) at the VK2WI Dural site (63 Quarry Road). Major items on offer are listed on the web site www.arnsw.org.au in the week leading up to the event. The T&T commences about 10 am. Boot sellers and traders are most welcome. The sausage sizzle is conducted on the new BBQ, along with cool drinks or get a cup of tea or coffee with plain biscuit from the VK2WI shack. In the afternoon the Radio Homebrew and Experimenters Group conclude the day with their show and tell and a technical lecture/demonstration. ARNSW provides a service for your preloved gear or Deceased Estates to be offered through the T&T operation. Donations of surplus equipment are also most welcome. Contact can be made via the office phone (and its answering system) on 02 9651 1490.

News submissions for VK2WI News should be sent by Friday evening to arnews@tpg.com.au You will receive an automated acknowledgement that

Continued foot of next page

VK3

Geelong Amateur Radio Club - The GARC

Tony Collis VK3JGC

Winter Solstice Dinner

This year the GARC had probably its biggest turnout of members and partners ever, complemented by six members from the Geelong Radio and Electronics Society including their President John VK3LJS.

During the dinner two presentations were given; the first by Barry VK3SY on Antarctica dealing with the Mawson expedition in 1911 and the involvement of Walter Henry Hannam.

Walter Henry Hannam was wireless telegraph operator for Mawson's 1911–13 Australasian Antarctic Expedition to Commonwealth Bay in Adélie Land. Aged 26 years, with a science diploma, Hannam was already a figure among radio experimenters, playing a key role in the establishment of the Wireless Institute of Australia. The opportunity to pioneer radio transmission in Antarctica was irresistible to him: he spent two summers and a troubling winter at Cape Denison, at times also acting as mechanic and assistant magnetician.

In February 1913 stable contact was made with Macquarie Island and Hannam exchanged the first major messages by radio telegraph from Antarctica. Both were news of tragedy. The first news Hannam's radio received was that Scott's party had perished while returning from the South Pole, defeated in their race with Amundsen. Hannam then transmitted Mawson's report of the deaths of his companions, Mertz and Ninnis, during their eastern survey of George V Land, and of Mawson's near fatal, lone sledge journey back to Cape Denison.

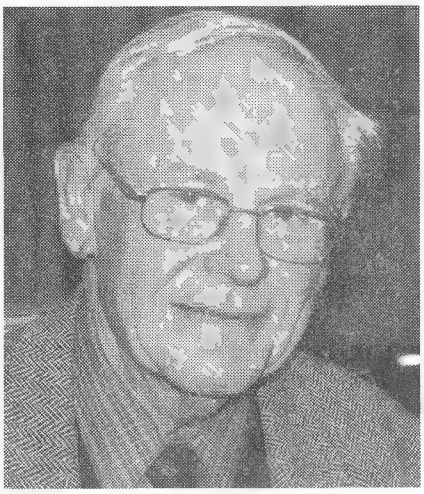
To amateur radio enthusiasts, Walter Hannam was well known by his call signs: VK2QI, VK2YH and VK2AXH.

He was a founder member of the Australian Wireless Association and actively involved until his death in 1964.

Barry sent an email with greetings and best wishes to Bob VK0BP, the only VK0 currently in Antarctica at Davis Station Antarctica, on their Mid Winter Celebrations. Bob responded with a long e-mail back to the GARC which Barry read out in its entirety.

The second presentation was by our guest Rod MacKenzie, assisted by his wife Pauline. Rod had a very interesting life attending the Geelong High and the Gordon. He has been a tradie, Plumbing Inspector, Educator, Parliamentarian, President of Victoria's Legislative Council and an Antarctica Expeditioner a number of times. He was awarded the Order of Australia Medal for services to the Community and the Australian Antarctic Program. Rod's talk dealt with some of the sociological problems they endured in the 70s with the communication limitations imposed on them: personal communications once a month with a severe time limit, and how the role of amateur radio enabled them to increase communication with family and friends. Rod has written a book on his experiences.

ar



Rod MacKenzie

Presidents' John VK3LJS and Dallas VK3DJ

VK2 News

it has reached the inbox of the news compiler John VK2JV. All VK2 clubs are most welcome to submit items about their club and activities. Individual submissions are also most welcome. Would those doing so please write in the 'third person' and format it so the announcer can make it flow when reading. There are some submissions that need to be edited. The broadcast times and frequencies are to be found on the inside back page of *Amateur Radio*. The text (evening) version of the news is posted to the ARNSW web site www.arnsw.org.au on Monday following that weekend. Text for the previous few weeks remain on the site.

The long running **VK2BWI** Morse training is now down to a Thursday evening on 3550 kHz provided by Ross VK2ER at Orange. Ross would welcome feedback via the callbacks at the end of the session as well as offers of assistance to provide additional nights.

73 – Tim VK2ZTM. **ar**

More VK2 news on page 24

News from

Ross Pittard VK3CE
Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au

VK3

A lot of behind the scenes work is continuing to be done by our team of dedicated volunteers to upgrade our repeater and broadcast network. The broadcast network has been restored to both Mt Baw Baw VK3RWG and Mt St Leonard VK3RMU repeaters, dramatically increasing coverage on VHF and UHF.

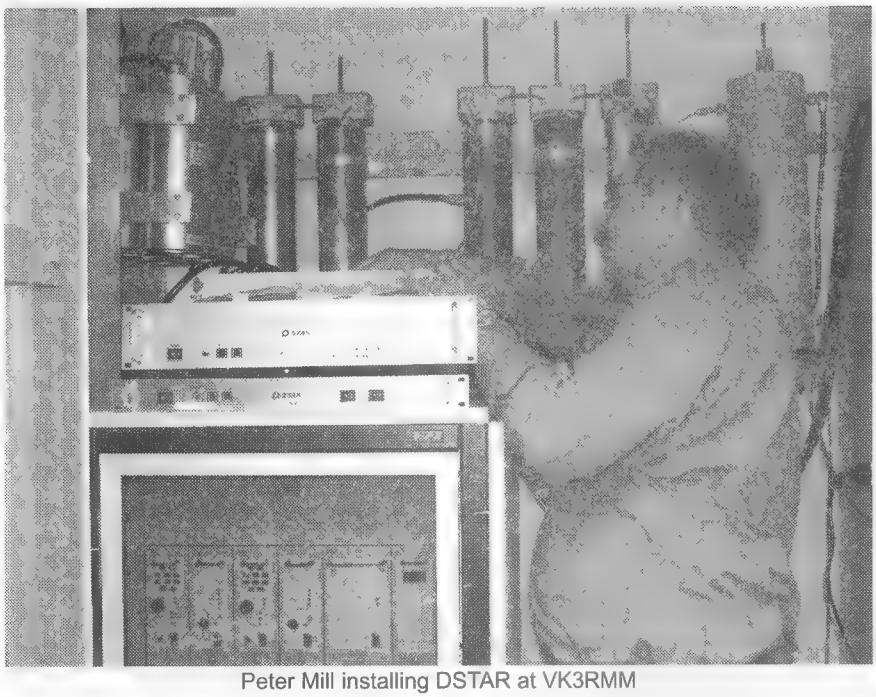
The Icom donated D-STAR repeater on Mt Macedon VK3RMM is fully operational on both 2 m and 70 cm and has a wide coverage area. Stations from Echuca, Bendigo, Shepparton, Geelong and Pakenham have been heard. By the time you read this the internet gateway should be operational on VK3RMM D-STAR. The Council would like to acknowledge the work of Paul Engler VK3XDE for providing a time-consuming yet cost efficient solution to site technical difficulties, and Richard Hoskins VK3JFK for initialising and programming work required for the internet gateway facility.

Work is still in progress at Mt William VK3RWZ and it is hoped that programmed tower work will be completed in the coming weeks, thus restoring another important link in our repeater network. Your Council believes it is vital to restore this site as soon as possible but factors outside our control have prevented this from happening any earlier.

Thanks to the work of Peter Cossins VK3BFG, the digital upgrade of the Melbourne ATV repeater VK3RTV is in its final stages with the change over of the transmitter and associated control equipment programmed for completion this month.

We are also pleased to advise the return of the highly popular Centre Victoria RadioFest to be held once again at the Kyneton Racecourse on Sunday 14th February 2010 – gates will open at 10 am. Currently we are looking for volunteers to present small talks on any aspect of our hobby, if you could help us please contact the organising committee at radiofest@amateurradio.com.au

Visitors to the rooms at Ashburton will have noticed a redesign of our office space; this was done to enable classes and small meetings to be held in a more comfortable atmosphere while not disturbing the essential office functions. We have also commenced the re establishment of a permanent station at the rear of the office so have a listen on the bands for VK3WI, we do QSL!



Peter Mill installing DSTAR at VK3RMM

The next weekend training and assessment session for the Foundation Licence will be September 26 & 27; the venue will be 40g Victory Boulevard, Ashburton. For inquiries or to enrol please contact Barry Robinson VK3PV on 0428 516 001 or foundation@amateurradio.com.au

With spring now with us and warmer weather ahead, it is a good time to venture out and operate amateur radio portable.

Listen out for those visiting the more than 40 National Parks in Victoria and participating in the Keith Roget Memorial National Parks Award. Full details can be found in the Awards section of the Amateur Radio Victoria website.

Why not join and support the state-wide organisation Amateur Radio Victoria? It costs $30 for Full or Associate membership and $25 Concession, for two years. New members are most welcome and an application form can be found on our website or will be posted out on request. **ar**

Amateur Radio Victoria

Centre Victoria RadioFest No. 3

This major amateur radio event is on Sunday 14 February 2010. At the Kyneton Racecourse an hour from Melbourne, Ballarat and Bendigo.
Proudly supporting the WIA centenary celebrations.
Sales space bookings and more info:
www.radiofest.amateurradio.com.au

VK6

Keith Bainbridge VK6RK

HAMFEST largest WA event (in radio anyway)

This month's column will be mostly taken up with a Hamfest report, seeing as it was yesterday (2 August) that it happened and it is fresh in my mind.

The Northern Corridor Radio Groups Hamfest is the largest event on the social calendar in Western Australia. We used to be able to say it was the only event but the revitalised activities of HARG and their successful sale held earlier this year could one day give the NCRG a bit of competition!

Like any event it takes a lot of planning and after 23 years you would think it would be easier, but it varies every year. We never really know until a few weeks before which traders will be making the trip from the east; we always have lots of interest from 'over there' but financial realities often dictate the decision being deferred until better economic times.

We have been delighted with the support from Yaesu over the past two years with Peter VK3TE making the trip and putting a lot of effort into the display. Icom Australia was also very helpful with the donation of a prize and representation by their agent in Perth, Tower Communications. Yaesu are represented by Tower Communications and City Online/Hamshack.

Geoff and Kylea made it to the Hamfest pre event dinner at Ham Heaven as did Peter VK3TE. The pre-event dinner has become a bit of a tradition on its own and any traders contemplating a visit should allow the extra time to come along to a great free feed at the clubhouse the night before the event. The other traders, who have all supported the event for several years were Terlin Outbacker, Bushcomm and Allcom. All reported brisk trading.

On the day 60 tables were laid out in the main hall and all were rapidly filled. There is no charge for tables at the show, but every person attending is charged the entrance fee of $5, including all club members, to keep it fair. There were a few grumbles about that but you get the table free! Try getting that at other Hamfests around the country.

This year the groups represented were Hills ARG, Peel ARG, VHF Group, WA Repeater Group and Scouts Australia. Unfortunately there was no WIA stand this year with Bob VK6POP being up north working. Maybe next year!

This years raffle prizes were donations from six of the traders present and were as follows with the winners' details:

STOP PRESS

We are delighted to announce that we are now a Kenwood dealer. Talk to us and listen to the future.

We are the WA agents for these famous

QUANSHENG

KENWOOD
Listen to the Future

VIBROPLEX

WINRADIO

Vertex Standard
AUSTRALIA

And a few words about the Quansheng

".. solid and rugged ...comfortable to hold...the audio qualities are superb! This is one of the nicest sounding handheld radios ...
For $100 (yes, Australian Dollars)...this radio represents absolutely phenomenal value.
.....The Quanshengs come highly recommended by me; I am sure you will be tickled by just how well these radios work for the money!"

WA's new Yaesu Dealer

We have the famous VIBROPLEX Morse keys

Geoff White (VK6NX) 08 9498 1157
116 Amethyst Cres, Mt Richon, WA 6112
Payment via Paypal, Cheque or Bank Transfer.

All details and a description of our other great products on
www.hamshack.com.au
email worm_hole@optusnet.com.au

Handhelds 2 m or 70 cm

LOCKED OUT FOR HAM BAND ONLY
144 TO 148 MHz (VHF)(2 m) OR 420 TO 450 MHz (UHF) (70 cm)

SIMPLEX & DUPLEX

$119 delivered in AUS

Sorry about the price rise, but its not us, it's due to the Aussie dollar collapse
STILL GREAT VALUE.

We have soft covers for $17.00

SPECIFICATIONS:
1) Voice Prompt on Keypad
2) CTCSS with 39 codes
3) 99 Storage channels
4) Auto scan
5) Large screen LCD
6) Back Lighting
7) VFO programmed (input freq. from keypad)
8) Hi & Lo Power select
9) Channel spacing: 5 kHz, 10 kHz, 12.5 kHz, 25 kHz
10) Keypad lock
11) Monitor function (input frequency)
12) Low-battery warning
13) Frequency Modulation
14) Auto power save
15) Output power: 4 – 5 W
16) Large-capacity battery
17) Ear/microphone auto-charger connections

Extra Battery (1500 mAh)	$17
Speaker Microphone	$12
Headset/Microphone	$8
SMA to BNC Converter	$5

$7 shipping charge on Items ordered separately

Yaesu VX-170 Handheld donated by Yaesu and won by Des VK6HDM.

Icom PS-300 power supply donated by Icom Australia and Tower Communications and won by Mick VK6IN.

Outbacker OB-8 Mobile antenna donated by Terlin Outbacker and won by Noel VK6BJ.

Solder Station donated by Alek VK6PY and won by Steve VK6CS.

Bushcomm SWC-100 antenna donated by Bushcomm and won by Wayne VK6EH.

Hamshack 23 cm Yagi donated by City Online and won by Des VK6HDM (again!).

Both Icom and Yaesu were well represented at the NCRG Hamfest, through their local agent Tower Communications.

Some of the large gathering hunting for a bargain at the NCRG Hamfest.

The very generous door prizes donated by various traders for the deserving who attended the NCRG Hamfest.

Kalgoorlie certainly did well as three of the prizes headed inland! The raffle was drawn by Wes VK6WX, the President of the Southern Electronics Group, in his dual roll as an NCRG member. Hopefully a couple of the pictures turned out well and, with the support of the Editor, can be seen here.

One thing that the Hamfest is famous for is the food. Once again the roast beef and gravy rolls, hot dogs and delicious home made cakes sold out with everyone commenting on the quality, especially of the cakes! The kitchen was very efficiently run by Maryanne (XYL of Alek VK6PY) and Gina (XYL of Barry VK6HX), with Ian VK6ZIC hovering around in the background. The food hall serves as a good meeting place to catch up with the on air contacts we only get to see at Hamfest.

This year's attendance was similar to last, with 384 people through the door before the admission table was abandoned to allow those who had patiently sat there to have a look around at last. Considering the estimate of active amateurs in Western Australia is about 300 then almost everyone must have been there.

One of the most pleasing things I noticed personally was the large number of Foundation calls present on the day. There appeared to be so many more than I had seen before so something must be happening out there. Some had their callsigns knitted into their jumpers; that certainly caught the eye.

A lot of junk, sorry, pre loved equipment seemed to change hands with Fritz VK6UZ once again filling six tables with all

Continued at foot of next page

Peter VK3TE presents the Yaesu VX-170 HH prize to Des VK6HDM, at the NCRG Hamfest.

Aysha Venugopal VK5FASH

Badged

It is not every day that ALARA office bearers get their badges in person and it is indeed a lovely thing when it happens.

However, first time ALARA secretary Marisa VK4FMAR received a nice surprise at a recent dinner organized for Gold Coast and Brisbane amateurs. There were at least 10 ALARA members and a number of YLs at the dinner.

Among the attendees was Susan VK7LUV who was visiting family in Queensland. Current ALARA librarian and former secretary Susan took the opportunity to present Marisa with her badge. So much nicer than getting it in the post!

ALARA anniversary

July marked the 34th anniversary of ALARA and each of the VK clubs celebrated in their own way. The YLs of the VK3 ALARA group decided to make it a day at the movies. Jenny VK5ANW/3 and Peter VK3RV hosted the event at their home in Sunbury and treated the group to an afternoon at the cinema.

It was going to be a soup and sandwiches afternoon, according to Jean VK3VIP. However, it turned out to be a huge spread with a chocolate mud cake for a birthday cake, a Pavlova with fruit and cream, three different soups and lots of snacks and cakes. It was enjoyed by all present, many of whom came with their OMs.

After lunch, it was time for the cinema and a number of couples took advantage of the seats in the dress circle. A lovely afternoon's entertainment followed that included a proper usherette in the interval with a tray of goodies. Dianne VK3FDIZ looked lovely in a uniform. The highlight of the event was the special guest "Miss ALARA".

VK3's 'Miss ALARA' looks all bright in yellow and gets her place in the dress circle for ALARA's birthday celebrations. That's Di VK3FDIZ holding Miss ALARA. Di is also one of the staff at WIA head office.

The YLs of the VK5 ALARA group celebrated with a lovely Sunday afternoon lunch on July 26 at the Morphett Arms Hotel. It was well attended by 12 YLs, six OMs and three harmonics. There was a lot of excitement over the forthcoming International YL Meet 2012 and the plans for a special trip on the Ghan.

IOTA award

For YLs who love a challenge, the ***1000 Islands On The Air*** award is a prize to decorate the shack with. Elizabeth VE7YL, a long time sponsored member of ALARA, should be on the next listing of the IOTA Honour Roll having finally confirmed her 1000th IOTA contact recently. Her efforts are an inspiration to many other YLs as this award is not an easy one to complete.

The top station in the IOTA 2009 Honour Roll had worked 1075 islands. The top VK station on the roll was the late Jim Smith, VK9NS, who was listed as having 1000. The award is managed by the Radio Society of Great Britain.

The challenge is to work licensed amateur radio stations operating on the islands listed in the RSGB IOTA directory. There are 21 awards listed and most amateurs start their collection with the basic IOTA 100 Islands of the World award with subsequent awards as the tally increases. The IOTA 750 Plaque of Excellence and the IOTA 1000 Islands Trophy are any collector's dream. Rules are on RSGB IOTA website www.rsgbiota.org

Elizabeth VE7YL, an avid amateur, is frequently heard on the 222 Net on a Monday afternoon, particularly during our summer. She is a pioneer Canadian wireless YL having got her commercial radio ticket during the war. She worked as a "sparks" on two Norwegian ships, one of the few Canadian YLs to have done so. For this YL who usually works CW, the 1000 IOTA award is yet another feather in her cap.

ar

News From VK6 *continued*

those hard to get connectors, parts and especially UHF/SHF equipment.

There were visitors from far afield, one being Reg G8VHI, one of the leading lights in the UK in the VHF and up areas. I had a few chats with him about the differences between Hamfest and the UK rallies and the lack of VHF/UHF/SHF weak signal operating in WA.

All in all a very tiring but rewarding day for members, how else can we finance Ham Heaven in Whiteman Park? Most people seemed to find that elusive bargain and had a smile on their face when finally leaving the venue, ready for next years foray, I hope!

The Hamfest committee, most efficiently run by Wayne VK6EH, our club President, would like to thank all who came and particularly all those who helped to make Hamfest 2009 a big success. Next year's event will be at the same venue and is already booked for Sunday 1 August, 2010.

Finally for NCRG news, next March, on Sunday 14th to be precise, the NCRG will celebrate the WIA Centenary with an open day at Ham Heaven. There will be a BBQ, car boot sale and a meet and greet with guided tours of the facility! We look forward to seeing you all there.

Next month we will resume our normal service of statewide news, if I get any that is. Thanks again to all who came to Hamfest, and to those who didn't get there, well you really missed a great day.

73 from cool, but sunny, Perth.

ar

News from

QTC VK4
First Published July 1927 "Of, By and For the Amateur"
News from for Queensland Radio Amateurs

Christopher Comollattie VK4VKR
Email: vk4vkr@wia.org.au
qtc@wia.org.au

SCARG

With a group consisting of 65 mature and experienced amateurs, the South Coast Amateur Radio Group is still going well and enjoyed a couple of recent birthdays. Ken Ayers VK4KD and John Gillard VK4AJG were both celebrating. The SARG HF net is held on 3.605 MHz Thursdays at 1930 hours: Call in and say hello.

CHARC

Central Highlands Amateur Radio Club will be holding an AGM on September 25th, 26th and 27th at Camp Fairbairn (Lake Maraboon).

Accommodation is available, dormitory style, so bring bed linen, blankets and pillow. Charges are the same as last year: $13.20 per night per person, day visitors $6.60. Charges are as set by the Department of Education. CHARC has no control of the fees or of the regulations set by the Department.

Please let Gordon VK4KAL know if you would like to attend, well before 20th September, so catering can be organised. Dinner (Saturday evening) and breakfast (Sunday morning) are available. No food supplies are available up until Saturday evening, so you will need to bring your own if you are arriving Friday.

A monster auction will be held on Saturday night, if you have any preloved items you wish to donate please bring them along and replace them with something you can bid on at the auction.

If you require any further information, please email the secretary on his new email address: gordon.l23@aussiebroadband.com.au or phone 07 4985 4168. Note the "l23" in the email address is an L in lower case, not a number 1 (one).

TARC

Townsville Amateur Radio Club is busy as usual. Sunday 27th September sees the King of the Hill Climb Heat Four at Mt Stuart. Mix the day with radios to the sound of squealing tyres and the smell of burning rubber. Operators needed to man start and flying finish for time control and safety communications. Operators signed in to date are VK4ZXX and VK4HSV. Saturday 26th and 27th September is the Woodstock Endurance Ride, get out into the bush only 40 minutes south of Townsville and operate either at ride base or portable checkpoints to provide a safety and competitor audit communications network. Get to try new things in the field day, play DX with minimum noise or even just stargaze at the clear night skies. Operators so far who will be enjoying this are VK4ZZ, VK4UCM and VK4FTVL. If you are available for any of these events please contact Blue VK4FBLU via telephone 4775 4184 at the soonest with your support.

The 2009 North Qld Amateur Radio Convention will be happening in the city of Townsville from Friday 18th to Sunday 20th September. Daytime events will be happening at James Cook University Douglas Campus with night time events centred on one of the better bistros and convention rooms in the city. Visits, lectures and displays are already firming up in the planning. The registration deadline for convention services is Friday 28th August. For an electronic copy of the venue and events details, surf the TARC website http://www.tarc.org.au or email vk4wit@wia.org.au

RADAR

Rockhampton and Districts Amateur Radio Club has delivered the winning prize. Glen Holborow VK4TGH, who recently relocated from Nanago to Gladstone, won the FT-1802 2 metre mobile radio in the RADAR Club raffle.

Thanks to those many people who supported the raffle. The draw was held at the RADAR Club monthly meeting on the 15th July. Thanks also to Rob VK4SEA who donated one kg of fresh prawns for something extra at the meeting. A quick selling of tickets saw the prawns won by Jack VK4JRC.

Until next time Cheers and 73
Chris VK4VKR **ar**

RADAR president Jack VK4JRC (left) handing Glen VK4TGH the winning prize – an FT-1802.

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The July meeting was of particular interest to some of the older amateurs. Rob VK5RG gave us a history of the Post Master General's Department as it changed over the years.

In the beginning the PMG was only concerned with the collection and delivery of letters. Next came telegrams to convey urgent information. With radio came international communication to be disseminated by letter/telegram or newspapers (which were not dealt with by the PMG).

As soon as there were amateur radio operators the PMG became the testing and licensing authority and shortly after that they set up a team of inspectors to make sure any radio equipment was safe (and in the early days that was not always the case, at all!).

Telephones and cable brought more complexity to the PMG doorstep as they linked the suburbs and then the cities with a network of telephone lines across the vast distances of our continent.

For a very long time the PMG was the main and almost the only carrier of messages. This was their main source of revenue to fund the network of telephone lines.

They were not ready to share this resource so amateur radio operators were not allowed, by law, to carry third party messages, or to be paid for passing on messages of any sort.

The PMG became, by default, the controller of all means of communication in Australia so they had to set up a communications branch to handle this side of things, too. The PMG became the largest government department in Australia, so what the PMG wanted or needed was what happened.

But, like Topsy, it became simply too large to be practical. So in 1975 the PMG was divided into three separate entities.

The postal service became Australia Post, the telephone service became Telecom and the communication control section became, first DOTC (Dept of Transport and Communication) and is today the ACMA which we all know.

All these things happened in our lifetime, and in the lifetime of many of our amateur licence experiences.

Alongside all these changes within the PMG, for amateurs, important changes were also happening. From the beginning, and particularly after WW2, the WIA had discussions with the PMG to make conditions easier for amateurs. One of the first major changes was at the end of the 1950s when a new exam was proposed that did not require Morse code; the Limited Licence came into existence.

Sometime in 1978 the Novice licence came along with its less difficult exam and a reduced level of Morse code and the multiple choice questions instead of the essay type questions. More recently the requirement for Morse code was abolished in line with worldwide abolition, and then the Foundation Licence was introduced.

There were many "Oh, yes, I remember" comments from the audience every now and then as Rob told us changes we had not noticed happening, but remembered when we were reminded.

Each month AHARS has lectures that we hope will interest members and visitors.

Please contact the President John VK5EMI or David VK5AMK (in the current callbook). We meet on the third Thursday of each month.

DON'T FORGET THE BUY AND SELL ON 13TH SEPTEMBER.

Radio Amateurs Old Timers Club of SA

The

Annual Luncheon

will be held on

Thursday 22 October 2009

(12 noon for 12:30 lunch).

(Please bring your Seniors Card)

Venue:

Marion Hotel

Marion Road, Mitchell Park

Public transport Bus M44, Stop 24.

RSVP to one of the following committee members before 20 October 2009:

Secretary:

Ray Deane VK5RK Phone: 8271 5401

Assistant Secretary:

Ron Coat VK5RV Phone 8296 6681

Ray Deane, Honorary Secretary

"Hey, Old Timer..."

If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for **less than 25 but more than ten years**, you are invited to become an **Associate Member** of the RAOTC.

In either case a **$5.00** joining fee plus **$8.00** for one year or **$15.00** for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194

News From

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au

VK7

The International Lighthouse/Lightship Weekend saw at least five stations participate this year: Winston VK7EM at Mersey Bluff Lighthouse (AU0040), Wayne VK7FWAY and Eric VK7FEJE at Table Cape Lighthouse (AU0039), Bill VK7MX, Duncan VK7FLAK and Yvonne VK7FYMX at Low Head Lighthouse (AU0048), Gavin VK7VTX at Pot Boil Channel Lighthouse, Flinders Island (AU0062) and John VK7ZZ at Cape Bruny Lighthouse (AU0005). We hope for some great reports in future issues of AR.

Repeaters/IRLP and EchoLink/APRS News

A new 70 cm repeater is now available in the South covering the Huon Valley. VK7RCH is running on 438.575 MHz RX, 433.575 MHz TX and no tone is required. Thanks to Hayden VK7HAY for this information. In NW VK7 the 6 m repeater VK7RTV is now operational on 52.775 MHz RX and 53.775 MHz TX. We are told that the 2 m repeater at this site should also be available soon on 146.175 MHz RX and 146.775 MHz TX.

IRLP Node 6616 and EchoIRLP Node 467772 have become available again on simplex 147.425 MHz in the Ulverstone area and these will be transferred to the 2 m VK7RTV once it becomes available. The Southern APRS I-Gate is run by Scott VK7HSE and has recently been updated and now runs the Java application - javAPRSServ (ver. 3.14b06). The I-Gate status page is available at: http://www.vk7hse.hobby-site.org:14501

Northern Tasmania Amateur Radio Club

Upon reflection, Jason VK7ZJA has come up with an analogy of electrons and Northern Tasmanian amateur radio operators as their recent activity levels appear both proportional to ambient temperature....HIHI. We welcome Al VK7AN back from overseas where he has been spreading the good word about VK7 amateur radio. Bill VK7MX has also managed to get hold of a good quantity of 20 pF mica compression trimcaps which are suitable for the traps of a HF squid pole multi-band vertical and other antenna projects, so contact Bill if you need any of these.

Cradle Coast Amateur Radio Club (CCARC)

The July CCARC meeting saw Bill VK7MX give a presentation about the squid pole antenna which was well received by all attending. The CCARC is now able to offer full assessments to anyone interested. Give assessor Keith Winkler VK7KW a call on phone: 64282185 or email: winklerkw@hotmail.com

North West Tasmanian Amateur TeleVision Group

We welcome Mark Grewar VK7FZZZ to the airwaves. He successfully completed his Foundation Licence assessment recently. NWATVG is currently planning for the October JOTA/JOTI weekend. If you are interested or have ideas, please contact Tony VK7ZX on email: atvgroup@vk7ax.id.au

Radio and Electronics Association of Southern Tasmania

Welcome again to the bands to James Cooper who now has his callsign which is VK7FJLC. A big thank you to Peter VK7FTAZ for doing the Channel 15 UHF CB rebroadcast in Hobart for many years. Peter and Fiona have moved to Queenstown on the West Coast. REAST's August presentation was a great night of big screen presentations about the International Space Station and the ARISS program. The highlight was the personal tour of the ISS with astronaut Mike and cosmonaut Gennady which provided a fascinating insight into life on the ISS. Thanks to Tony VK5ZAI for these presentations. Members from REAST enjoyed presenting the WIA National News on the 19th July 2009 for a second time. A big thank you to VK7OO, VK7MJ, VK7FEET, VK7FPAH, VK7TL, VK7ZGK, VK7NML and VK7FB for a very professional presentation. Also thanks to Barry VK7TBM and Tom VK7FTWS who allowed us to use the quiet Coast Radio Hobart studio to do the recording. **ar**

QTY

Keep your books

Back in the early 1950s I wanted to become an amateur radio operator and I had the privilege to meet an amateur radio operator who was a fireman, and was stationed at the Port Adelaide fire station in South Australia.

A few weeks ago I returned to Adelaide for a short vacation and I passed the same building, and I had a flashback to the early 1950s. I never forgot that meeting.

I have moved around a lot, in and out of many countries since 1960 and in doing so I had to reduce my excess baggage, so I had to part with a lot of good equipment and many good technical books, which I regretted.

Well, to cut a long story short, I attended the Townsville Amateur Radio Club's Christmas Party auction, where I purchased three bags of old books. After returning to my QTH at Cardwell I decided to check what I had bought, and to my pleasure many of these books were almost identical to what I was forced to get rid of all those years ago.

What has this got to do with the fireman I had met many years before?

Well, the first book I opened, on the inside cover was his name and QTH Port Adelaide fire station. What a thrill. It looked like we bought the same books.

For your information, one book is dated 1894. These books may be old technology, but they helped me get my callsign, and they are worth having in the library again.

I give thanks to the fireman and VK5JW (SK) and VK5HW (SK) for giving me the chance to become an amateur radio operator.

The moral of the story is "keep your books".

Brad Booth VK4CDL/VK2BJB. **ar**

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
vk7rh@wia.org.au

Spring is here and I am certainly looking forward to warmer weather after the winter chills aggravated my arthritic knees. Earlier today, I was calmly eating my breakfast, when the doorbell rang. There were tradesmen from an insulation company who were contracted by this retirement facility to upgrade my unit's insulation.

I have not really done much listening around of late. I have been pre-occupied with other pressing family matters. However I did observe that the Greek language station on the NSW Central coast suddenly re-appeared in the last week of July.

It is within the 120-metre tropical allocation and is on 2368.5. It is extremely odd because I was under the impression that stations broadcasting within this allocation are supposed to be located between the Tropics of Cancer and Capricorn.

I hardly think that the NSW central coast qualifies as being tropical! I also query the rationale of transmitting here as there are few commercial receivers still around with the 120-metre band. I speculate that the station wanted to get away from the other Greek language outlets on the existing AM band, mostly between 1602 and 1701 kHz. Anyway the sender has already been logged as far away as California and Finland. The operators claimed to be only running 50 watts at the time and will be aiming for a kilowatt.

I note that there is a clandestine station heard on 6701 kHz at around 0307 daily signing on with an Islamic Call to Prayer. This is within the aeronautical allocation yet the transmission does not appear to be related to that activity. Speculation is that it may be operated by the NATO coalition forces within Afghanistan, similar to past psychological warfare activities.

Have you heard the Saturday morning AM Net on approximately 7125 kHz? It kicks off around 2230 and brings back a lot of memories for me, when I first started off in the early seventies. Remember VK3BCX from Benalla? He had a superb signal but sadly SSB won out and he was often alone in defending AM. I also recollect that there used to be a number of excellent AM signals on 160 metres. I wonder what became of them.

Well that is all for now. Do not forget you can email me your news and comments to vk7rh@wia.org.au

Over to You

A Real Amateur: or '*Necessity is the Doctor of Communications Invention*'

....and a call for WIA consideration

From Rex Newsome VK4LR

I first met Bob Segalman DSc about 10 years ago, on his first visit to Australia.

As Bob was born with fairly severe cerebral palsy he was in a motorised wheelchair and spoke with an electronic voice-enhancement device. Because I was involved in disability matters at the time, being the chairman of several disability organisations, I was singled out to be on a committee to help establish the Speech-to-Speech (STS) system in Australia.

What is Speech-to-Speech? Well, since many people with speech impairments find using a phone frustrating, because the person at the other end cannot understand them and will therefore usually hang up rather than persevere, Bob devised the STS system.

It is a service whereby anyone with impaired speech can ring a special telephone number from anywhere in the country and talk to someone on the telephone through a trained operator.

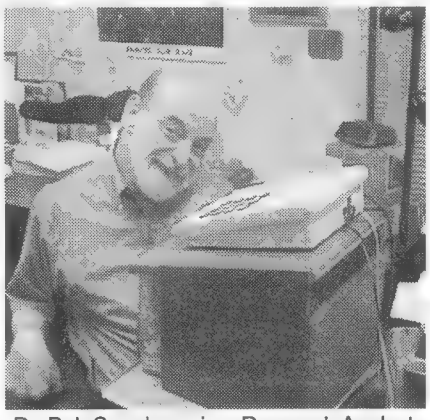
The operator listens carefully and relays whatever the user is saying to the person at the other end. The user hears the respondent directly (an example of STS can be seen on Facebook by typing in 'Bob Segalman').

The STS system has been highly successful in the US and is, largely through Bob's mammoth effort, now available in many countries throughout the world, including Australia.

When we met we quickly discovered that, besides both having cerebral palsy (mine is fairly mild however), we were both radio amateurs, Bob being W6OSO.

We have kept in touch over the years and Bob is still zooming around the world in his wheelchair to convince yet more countries to install STS.

I have penned this to make readers aware of STS so they can pass on the message to whomever they know who might find it useful. I also want to suggest that the WIA consider a way of implementing a specialised STS service for older amateurs who are now less than R5 on a microphone. Perhaps such service could be offered through a repeater and appropriately trained ham volunteers?



Dr. Bob Segalman is a Research Analyst with the California Department of Rehabilitation and the National Founder of Speech-to-Speech Consumer/Disability Advisory Committee. He holds both a MS and an earned Ph.D. in Social Welfare/ Sociology from Florida State University and the University of Wisconsin, respectively.

Steam radio goes mobile

Scouts National Radio Camp at Gilwell Scout Park, April 14-18, 2009

Arthur Greaves VK3FBEE

Scout Radio and Electronics Service Unit

Scouts, adult and youth alike, arrived in Melbourne from far and wide. In the camp, near Gembrook in the foothills of the Dandenongs, were representatives from suburban Melbourne, rural Victoria, South Australia, West Australia, and New South Wales, twenty eight in total.

The 'Staff' moved in on Tuesday afternoon from 1300, meeting, greeting, and sharing cheer, coffee, stories and, after lunch, getting down to the business of setting up the camp.

Members of the 'National Radio Camp' on 'Puffing Billy', although not quite mobile (yet!). Scout pictures by Robert Broomhead VK3DN

Two young NRC members having lots of fun operating 'Puffing Billy' mobile.

The 'all amateur radio operator' Leader Group, of sixteen adults and two Venturers, were allocated tasks and schedules.

Many spent the afternoon planning, setting up the training room and various other site activities. After the evening meal, time was spent in Cleve Cole Hut, the radio shack.

Day two, Wednesday: the NRC participants arrived and were processed through the meet, greet and room allocation session and the Camp officially opened.

Part one of the training course covered 'what is amateur radio, the nature of amateur radio, licence conditions, call signs, operating procedures, technical basics and band plan'. The day was broken up by fox hunting and a visit to the radio shack; in the evening games outside and a guest speaker with a talk on contesting, QSL cards and propagation prediction software programs was enjoyed by all.

Day three, Thursday: Foundation training part two, covering transmitters, receivers, antennas, transmission lines and propagation were all covered with activities involving antenna building and erecting, radio operating and, in the evening, a movie and a visit to the ESTA, 000 (triple zero) Emergency Communications Centre.

Day four, Friday: Foundation training part three. Subjects for the day were interference, repeaters, CTCSS, IRLP, DTMF and safety. Theory and practical assessments were next with lunch in between. The remainder of the day was used to finish off building the two metre J pole antenna made of TV ribbon, the 'dirty' balun, made of PVC tube and coax cable, or any of the other projects being built.

An after dinner talk by a Wireless Institute of Australia representative gave all an insight to its activities, and a second session on D-STAR was also of interest.

Continued foot of page 42

Contests

Craig Edwards VK8PDX (ex VK5HRT)
vk8pdx@yahoo.com.au
PO Box 285, Alice Springs NT 0870

Contest Calendar for September — October 2009

September	5/6	All Asia Contest	SSB
	12/13	Worked All Europe Contest	SSB
	12	**Westlakes Cup (Westlakes ARC)**	**SSB**
	19/20	Scandinavian Activity Contest	CW
	26/27	Scandinavian Activity Contest	SSB
	26/27	CQWW RTTY DX Contest	RTTY
October	**3/4**	**Oceania DX Contest**	**SSB**
	9	10/10 International Day Sprint	CW/Phone
	10/11	**Oceania DX Contest**	**CW**
		Moon Contest	CW/SSB/Digital
	17/18	Worked All Germany	CW/SSB
	17/18	JARTS Worldwide RTTY	RTTY
	17/18	50 MHz Sprint	All
	18	Asia Pacific Sprint	CW
	24/25	CQWW DX Contest	SSB
	24/25	ARRL International EME Competition	All

With the month of September, I cannot help thinking contest, contest, contest. The Remembrance Day contest weekend was a definite warm up for some of the fun to be had in the world of contesting at this time of year.

A quick look at the contest calendar reveals a major event every weekend depending on your modes of choice and the DX reaching capability of your station. If you only remember one thing from this month's column, it is this: IT IS TIME TO PREPARE FOR THE 2009 OCEANIA DX CONTEST.

Oceania DX Contest – 2008 Results from 783 Logs!

The Oceania DX Contest Committee, namely ZL1AZE, VK3TZ, ZL3GA, VK7GN, VK2FHN, VK6DXI and ZL2BSJ/PE7T, have released the results of the 2008 Oceania CW and Phone contests. Participation in the 2008 contest was the highest recorded to date, with 783 logs submitted. What fantastic news considering that conditions on the higher bands were generally poor due to the lack of solar activity.

Of particular note was the excellent turnout from VK stations in the Phone section. As well as the more common VK, ZL, YB and KH6 stations, there were a number of stations active from some of the rarer Oceania entities, including 9M6, DU, KH2, T88, V8 and VK9 Norfolk Island.

The Oceania DX Contest Committee congratulates all the winners and thanks all who participated, even if only to make one or two QSOs. Of special note was the performance of Akira Hujimoto JR1VAY who operated the AH2J station to take top position in Oceania for the Phone Single Operator All Band category.

This meant that John Loftus VK4EMM was unable to repeat his usual feat of leading Oceania in both the Phone and CW Single Operator All Band categories but he still led Oceania in the CW Single Operator All Band category by a considerable margin.

Also of note was the performance of JA7NVF who has again produced the highest score outside Oceania in the Phone section, and RD3A who produced the highest score outside Oceania in the CW section.

In order for a club to be eligible for the Australia Club plaque, there must be at least five logs from member stations, with each log containing a minimum of 50 valid QSOs. Only two clubs met this requirement in 2008: the Eastern and Mountain District Radio Club with six logs and the Northern Corridor Radio Group with five logs.

The rules state that there must be three or more clubs competing in order for the plaque to be awarded but the sponsor (VK Contest Club) waived this requirement for the 2008 contest, in the interest of promoting the plaque and encouraging 2009 contest participation.

The ongoing sponsorship of plaques is critical to the future growth and success of this contest. The contest committee would welcome new sponsorship offers and invites anyone who is interested in

becoming a sponsor to contact them at info@oceaniadxcontest.com

The cost of sponsoring a plaque is approximately AUD $50.00 per annum, to cover the expenses. You could always be sneaky: my wife is still not aware that I am sponsoring a SSB category, if she finds out I will just say it is my duty as AR Contest column editor.

The Oceania DX Contest Committee report the overall number of QSOs logged in 2008 was 14% greater than that recorded in 2007, but was still 13% below the record of 39,863 QSOs logged in 2006. Competitors indicated propagation to be generally only poor to average; so much of the increase between 2007 and 2008 would appear to be attributable to increased participation.

Most of the activity was on the 20 m and lower bands, with 40 m making the biggest contribution to final scores. Conditions on 80 m were significantly better than previous years, with the percentage of QSOs on this band increasing to 10% in the phone section and 14% in the CW section. Of particular note was the activity of VK9CNC who logged 512 CW QSOs on 80 m. The phone section seemed to enjoy better conditions on 15 m and 10 m than the CW section, but the overall activity on these bands was still very low compared to earlier years when the solar activity was greater.

The average levels of 10 cm solar flux radiation for the Oceania DX Contest weekends of 67 (Phone) and 70 (CW) were similar to those in 2007 and represent the lowest values recorded since 2001. Unfortunately as I compile this month's column, the levels still remain very similar, so when planning a strategy for this year, we can pretty much go by what happened in 2008 as a guide for 2009.

For the 2008 contest 783 logs were processed, a 21% increase compared to 2007, and a 9% increase compared with the previous record of 708 logs in 2006. Of particular note was the fantastic turnout from VK stations in the phone section – a total of 67 VK phone logs was submitted in 2008 compared to 41 in 2007 and 53 in 2006.

There was also a large turnout from European Russia stations in the CW section, with a total of 88 logs being submitted from this country area. The increased participation was most encouraging to the contest committee and quite remarkable considering that HF conditions for the 2008 contest were only poor to average.

The increase can be attributed to a combination of factors including the delivery of the outstanding plaques to winners from previous years and increased promotion of the contest, especially in Australia.

Actual activity was much greater than indicated by the number of logs submitted. For example, there were at least 1,050 stations in the Phone section that made a minimum of five QSOs, but only 376 logs were submitted.

Similarly, in the CW section, there were at least 830 stations that made a minimum of five QSOs, but only 405 logs were submitted. In the Phone section there were at least 134 VK and 39 ZL stations that made 10 or more QSOs, but only 66 VK and 21 ZL stations actually submitted logs. Similarly, in the CW section there were at least 38 VK and 22 ZL stations that made 10 or more QSOs, but only 24 VK and 12 ZL stations actually submitted logs.

The contest committee report that the focus needs to shift to increasing the participation rates in some other Oceania countries. Participation from Asia and Europe continued to be strong, with a notable increase in the number of logs from Europe in the CW section, mainly due to increased activity from stations in the European Russia and Ukraine.

The participation rates from North America, South America and Africa are still lagging well behind the other continents. It is hoped that participation from North America will eventually be spurred by the plaques that were recently introduced for the leading North America entries in the Phone and CW Single-Op All Band categories.

In line with the trends for other major international contests, the contest committee is also considering publishing the logs from future Oceania DX Contests on the web. The rules for the 2009 contest will be modified to provide for this possibility. The Committee would be interested to receive any comments that existing or potential entrants might like to make concerning the desirability of publishing the logs on the web.

Extensive results are available at www.oceaniadxcontest.com/results.htm but here is a brief run down of top 3 placegetters in Oceania and in VK:

Steam Radio continued from page 40

demonstrations of field antenna systems and how to dismantle and stow gear safely without damage was carried out. Personal kits were packed and loaded into vehicles ready for transport to the pick-up point.

After lunch all were taken to 'Puffing Billy' for a trip to Belgrave. On arrival at Gembrook station, the camp group was allocated a carriage which was quickly turned into a radio shack on tracks, HF at one end, VHF/UHF at the other, and much to the interest of all the other passengers and bystanders Our two Venturers, Tim VK3FTIM and Cal VK3FCWA, played a big part in the set up of the train mobile amateur station.

Once under way the first CQ call started a rush which continued for two hours, from Gembrook all the way to Belgrave. HF contacts were made throughout Australia, New Zealand and into several other countries. VHF contacts through the many accessible repeaters in the two hour trip were also high. So many contacts, so many QSL responses to send, so many surprised looks, so much fun.

Is the '**National Radio Camp**' going to happen again? Sure will! Keep watching the web site of the Scout Radio & Electronics Service Unit Vic at www.sresu.asn.au

Information will also be on the Scout web site and in the Scout Magazine, as well as the WIA web site and its magazine, *Amateur Radio*.

Who do we thank, where do we start! To Jenny VK3MDR and Philip VK3JNI, without whom there would have been NO camp. Thank you to Bob VK6POP, Paul VK5PH, Kent VK3TER, Greg VK3FUNK, Ben VK3HBN, John VK3AEK, Allan VK3FSFA, Peter VK3ZPF, Peter VK3AJ, Peter VK3TQ, Robert VK3DN, Bryan VK3YNG, Dean VK3NDJ, Adam, and all the others who played a part in either the running, or supporting, of the camp.

Oceania Phone

1st Phone SO ALL	AH2J	1931616 points
2nd Phone SO ALL	VK4FW	1680525 points
3rd Phone SO ALL	VK6IR	1467978 points
1st Phone SO 160 m	ZL4RMF	5040 points
1st Phone SO 80 m	ZM2HAM	29260 points
2nd Phone SO 80 m	KH6QJ	25160 points
3rd Phone SO 80 m	ZL2CCO	1440 points
1st Phone SO 40 m	ZL2CC	14720 points
2nd Phone SO 40 m	ZL1KMN	8580 points
3rd Phone SO 40 m	VK3YXC	3850 points
1st Phone SO 20 m	V8AQM	47520 points
2nd Phone SO 20 m	9M6YBG	20618 points
3rd Phone SO 20 m	VK4KKD	16906 points
1st Phone SO 15 m	YC9MDX	234256 points
2nd Phone SO 15 m	4F1AL	79464points
3rd Phone SO 15 m	T88OM	61920 points
1st Phone MS	VK6ANC	793191 points
2nd Phone MS	ZM1A	511525 points
3rd Phone MS	VK7WCN	16470 points
1st Phone MM	VK4KW	1430920 points
2nd Phone MM	VK3FRC	138600 points
3rd Phone MM	ZL1VK	64038 points
1st Phone SWL	VK3FTJH	34432 points

Australia Phone

1st Phone SO ALL	VK4FW	1680525 points
2nd Phone SO ALL	VK6IR	1467978 points
3rd Phone SO ALL	VK7ZE	1126460 points
1st Phone SO 40 m	VK3YXC	3850 points
2nd Phone SO 40 m	VK3PC	3360 points
3rd Phone SO 40 m	VK6ZLA	2380 points
1st Phone SO 20 m	VK4KKD	16906 points
1st Phone SO 15 m	VK4FJ	12928 points
1st Phone MS	VK6ANC	793191 points
2nd Phone MS	VK7WCN	16470 points
1st Phone MM	VK4KW	1430920 points
2nd Phone MM	VK3FRC	138600 points
3rd Phone MM	VK3SAT	60792 points
1st Phone SWL	VK3FTJH	34432 points

Oceania CW

1st CW SO ALL	VK4EMM	3559448 points
2nd CW SO ALL	VK7GN	1931655 points
3rd CW SO ALL	ZM2B	1708772 points
1st CW SO 80 m	VK9CNC	1078470 points
2nd CW SO 80 m	ZL2AGY	152280 points
3rd CW SO 80 m	VK4FW	69930 points
1st CW SO 40 m	VK2BJ	305760 points
2nd CW SO 40 m	ZL3TE	249375 points
3rd CW SO 40 m	VK8AV	79750 points
1st CW SO 20 m	9M6YBG	46612 points
2nd CW SO 20 m	ZL2RVW	5712 points
3rd CW SO 20 m	VK3QI	2668 points
1st CW SO 15 m	YD1BJX	27336 points
2nd CW SO 15 m	YD1HUH	15756 points
1st CW SO 10 m	VK4YN	4851 points
1st CW MS	ZM1A	2569987 points
2nd CW MS	ZL4A	1593357 points
1st CW MM	VK3FRC	48800 points

Australia CW

1st CW SO ALL	VK4EMM	3559448 points
2nd CW SO ALL	VK7GN	1931655 points
3rd CW SO ALL	VK2IM	1102790 points
1st CW SO 80 m	VK4FW	69930 points
1st CW SO 40 m	VK2BJ	305760 points
2nd CW SO 40 m	VK8AV	79750 points
3rd CW SO 40 m	VK4KW	57855 points
1st CW SO 20 m	VK3QI	2668 points
1st CW SO 10 m	VK4YN	4851 points
1st CW MM	VK2FRC	48800 points

Oceania DX Contest – 2009 Rules

Well after all that, I'm ready to dive into the 2009 event, and the great news is that it is coming just around the corner. So dust off those tribanders and start looking in the shed for radial wire for that faithful old 40 m vertical. Spring is sprung and wire needs to be hung – its Oceania DX contest time! The general rules are provided below however those people participating should visit www.oceaniadxcontest.com for all the information.

SPECIAL NOTES

All email logs are processed by an email robot. The robot sends an automated email acknowledgement indicating either acceptance or rejection of the log. If you do not receive this acknowledgment, or are encountering difficulty in having the log accepted, then please contact info@oceaniadxcontest.com

Electronic logs are to be in Cabrillo format which is now generated by all popular contest logging software programs. Alternatively entrants can use the forms at http://www.b4h.net/cabforms/ to manually create and submit a Cabrillo file.

Portable prefixes must be inserted in front of the home callsign, e.g., W1XXX operating in ZL1 would sign as ZL1/W1XXX. If the station worked does not provide a serial number, then log the received number as 001. See rule 8. This new provision allows credit for contacts with stations that are not in the Oceania DX Contest. A reminder that Single-Op Single Band logs are to record ALL contacts made by the station - both on the band chosen for the entry and on any other bands. Stations must log a minimum of 10 contacts to be eligible for an award.

CONTEST PERIODS:

Phone Contest: 0800 UTC Saturday 3 October to 0800 UTC Sunday 4 October 2009. CW Contest: 0800 UTC Saturday 10 October to 0800 UTC Sunday 11 October 2009.

AIM:

To promote HF contacts with stations in the Oceania region

OBJECT:

Oceania transmitting stations to contact as many stations as possible both inside and outside the Oceania region.

Non-Oceania transmitting stations to contact as many stations as possible inside the Oceania region. There is no penalty for working non-Oceania stations but contacts between non-Oceania stations will score no points or multiplier credits.

Oceania receiving (SWL) stations to copy as many contest stations as possible both inside and outside the Oceania region.

Non-Oceania receiving (SWL) stations to copy as many contest stations as possible inside the Oceania region.

BANDS:

160 m – 10 m (no WARC bands).

TERMS OF COMPETITION FOR ALL CATEGORIES

A different callsign must be used for each entry. Entrants must not exceed 1500 watts total output power, or the maximum permitted output power in their country, whichever is less, on any band. QSO alerting assistance (e.g. packet spots) is allowed but self-spotting, asking other stations to spot you, or any other form of soliciting QSOs is not allowed. All of an entrant's transmitters and receivers must be located within a 500-metre diameter circle or within the property limits of the station licensee, whichever is greater. All antennas must be physically connected by wires to the transmitters and receivers used by the entrant. Remote operation is permitted. The entry location of a remote station is determined by the physical location of the transmitters, receivers, and antennas. A remote station must obey all station and category limitations.

ENTRY CATEGORIES

SINGLE-OP: Single Operator, All Band or Single Band. One person performs all of the operating and logging functions. Only one transmitted signal is permitted at any time.

MULTI-SINGLE: Multiple Operator, Single Transmitter, All Band. Only one transmitter and one band permitted during a 10-minute period. Exception: One other band may be used during a 10 minute period if the station worked is a new multiplier. It is permissible to use a second transmitter for working the multiplier stations on an alternate band. Ten-minute periods begin with the first

logged QSO on a band. The log must indicate which transmitter made each QSO in column 81 of the Cabrillo QSO template - use "0" for the run station and "1" for the multiplier station.

MULTI-MULTI: Multiple Operator, Multiple Transmitters, All Band. No limit to transmitters, but only one transmitted signal (and running station) allowed per band at any time. Use a separate serial number sequence for each band.

SWL: Short Wave Listener (Receive Only), All Band.

EXCHANGE: RS(T) report plus a three or four digit number starting at 001 (or 0001) and incrementing by one for each contact. MULTI-MULTI entries must use a separate serial number for each band. If the station worked does not send a serial number, then the received number is to be logged as 001.

MULTIPLIER: The multiplier is the number of different prefixes worked. Note that the same prefix may be counted once on each band for multiplier credit. A prefix is the letter/numeral combination that forms the first part of the amateur call - the same as the CQ WPX contest definition. Examples of valid prefixes are N8, W8, WD8, HG1, HG19, KC2, OE2, OE25, etc.

Any difference in the numbering, lettering, or order of the same shall constitute a separate prefix. A station operating from a DXCC country different from that indicated by its callsign is required to sign portable. The portable prefix must be an authorized prefix of the country/call area of operation.

In cases of portable operation, the portable designator will then become the prefix. Example: N8BJQ operating from Wake Island would sign KH9/N8BJQ or NH9/N8BJQ. KH6XXX operating from Ohio must use an authorized prefix for the U.S. 8th district (W8, K8, etc.).

Portable designators without numbers will be assigned a zero (Ø) after the second letter of the portable designator to form the prefix. Example: PA/N8BJQ would become PAØ. All calls without numbers will be assigned a zero (Ø) after the first two letters to form the prefix. Example: XEFTJW would count as XEØ. Maritime mobile, mobile, /A, /E, /J, /P, or interim license class identifiers do not count as prefixes.

Special event, commemorative, and other unique prefix stations are encouraged to participate. Prefixes must be assigned by the licensing authority of the country of operation.

CONTACT POINTS: Each QSO is credited twenty points on 160 m; ten points on 80 m; five points on 40 m; one point on 20 m; two points on 15 m; and three points on 10 m. Note that the same station may be counted only once on each band for contact points.

THE FINAL SCORE is the sum of the Contact Points multiplied by the Multiplier (the total number of prefixes worked on all bands, noting that the same prefix can be counted once on each band).

AWARDS

To be eligible for an award, stations must log a minimum of 10 contacts. Certificates will be awarded to the top scoring station in each category listed for each IARU WAC continent and each country.

A special participation certificate will be awarded to every station that makes at least 100 QSOs in either the PHONE or CW sections of the contest. The following trophies and plaques will also be awarded:

Top entrant from Oceania in Phone Single Operator All Band category: Ron Wills ZL2TT Memorial Trophy sponsored by ZL2GI, ZL2AL, Wellington Amateur Radio Club and NZART.

Top entrant from VK in CW Single Operator All Band category: Frank Hine VK2QL Memorial Trophy sponsored by the WIA.

Top entrant from VK in Phone Single Operator All Band category: plaque sponsored by Tony Hambling VK3VTH.

Top local club from Australia with the greatest number of member stations participating in the Oceania DX Contest: plaque sponsored by VK Contest Club.

Top Entrant from Asia in Phone Single Operator All Band category: plaque sponsored by Craig Edwards VK8PDX.

Top Entrant from North America in CW Single Operator All Band category: plaque sponsored by the Oceania Amateur Radio DX Group Inc.

Top Entrant from North America in Phone Single Operator All Band category: plaque sponsored by N6RO.

Top Entrant from Europe in CW Single Operator categories: Frank Vander Drift VK3COF Memorial plaque sponsored by Mirek Rozbicki VK6DXI.

Top Entrant from Europe in Phone Single Operator All Band category: plaque sponsored by the Oceania Amateur Radio DX Group Inc.

Further information including log requirements and entry submissions should be obtained from the contest website. So please visit www.oceaniadxcontest.com, email info@oceaniadxcontest.com or write to Oceania DX Contest Committee, c/o Wellington Amateur Radio Club Inc., PO Box 6464, Wellington 6030, New Zealand.

NZART Memorial Contest

With the recent VK Shires contest, I noticed a handful of ZLs taking the time to be on 80 so I thought I would repay the favour by entering the NZART Memorial contest. The event occurred on 80 m in six one hour blocks from 0800 to 1100 UTC on Saturday and Sunday evenings.

I figured the VK8 prefix would be quite a rare multiplier, so I was looking forward to a bit of fun. With my recent move to Alice Springs, I had just completed putting up the ground mounted multiband vertical and forty 20 m long radials were spread all over the backyard.

A temporary full size 80 m dipole was also thrown in the air. It was only temporary because half of it was in a public space and had to be done under the cover of darkness.

It was tricky at the 0800 UTC start with Alice Springs still being in full sunlight, but by 0900 UTC I could start hearing the action. Apart from ZL4U (aka ZL3SV), all ZL stations were right down in my noise floor and I really had to strain my ears to make any trans-Tasman contacts. While running on a frequency, every now and then Catherine VK4VCH would scare the life out of me when she responded to my CQ with her monster signal.

Once I composed myself, it was back to struggling with the threshold level voices. All in all a fun experience, despite the difficulties of this inland location I contacted 16 ZL stations. The goal was to give out the much needed VK8 multiplier so at least there were 16 happy chappies.

The Westlakes Cup

This is a quick contest run by the Westlakes Amateur Radio Club that is surely worth a look. Even those hams without much spare time can enter as it only goes for an hour on a Saturday night.

Date: Saturday 19th September 2009.

Time: 1030 to 1130 UTC

Band: 3535 to 3620 kHz

Mode: SSB, DSB, AM

Maximum power limit is 100 W for standard and advanced and 10 W for foundation licence holders. All Stations shall call 'CQ Westlakes Cup'. Exchange shall be the operator's name and a signal report.

After the contact is made and reports exchanged the station that had called 'CQ' must QSY at least 5 kHz from the frequency before calling again. There will be no 'sitting' on a frequency and working a 'pile up'.

You must QSY after each contact is made. Only VK or Special Prefix (AX, VI) Australian stations may be worked. The contest may expand to ZL, P2 and other South Pacific neighbours in the future.

Points A:

There will be two BONUS stations operating in the contest. The BONUS stations are the stations that hold the Cup from the previous year's contest. The stations that are the BONUS stations will be worth 1 point for the QSO plus 3 bonus points and may be worked twice in the contest, once every half hour, if you can find the mischievous little devils. This year the BONUS stations will be VK7VH/BONUS and VK2FRKO/BONUS.

Points B:

Amateur radio clubs and WIA affiliated stations are encouraged to take part. Every amateur radio club that takes part in the contest shall be worth 1 for the QSO plus 1 bonus point.

Every amateur radio club taking part shall sign with the call eg. VK2--/CLUB. WIA station calls such as VK2WI, VK4WIT, VK2BWI etc. shall qualify under the same scoring system as Amateur Radio Clubs and must identify themselves with a /CLUB after the call sign eg. VK3W--/CLUB.

Amateur Radio Club stations and WIA Club Stations may be worked only once in the Contest hour.

Points C:

Every station that does not fall into the BONUS categories listed above shall be worth 1 per QSO and shall be worked only once during the Contest.

Points D:

SWLs shall be able to claim the same points as per transmitting stations. For example if an SWL hears a BONUS station they may claim 1 point plus 3 bonus points. If they hear a radio club or WIA club station they can claim 1 for the QSO plus 1 bonus point. They must record the callsign and information of both stations in the QSO.

Awards:

Inscribed cups shall be awarded to the stations with the highest points attained. There will be one cup awarded in the Advanced and Standard Licence Category (100 Watts) and one in the Foundation Licence Category (10 Watts).

Certificates shall be awarded to the first, second and third place getters in each section, additional certificates may be issued to those who, in the opinion of the contest manager of Westlakes Amateur Radio Club have contributed, maintained or attained prominence in any particular area of expertise or excellence in the contest.

At 1015 UTC on 3585 kHz +/- QRM, the BONUS station shall make an announcement outlining the basic rules of the Contest.

At two minutes prior to the contest, the BONUS station shall make an announcement to the affect that the contest shall begin in two minutes.

After the contest, the BONUS station shall call in all stations again on 3585 kHz +/- QRM that wish to declare their scores for the contest.

The object of this 'check in' after the contest is that stations may get an 'idea' of the contest results on the same night as the contest takes place although confirmed places will only be made known after the contest manager has received and checked the logs.

VK contest logger supports this contest and is available at http://web.aanet.com.au/~mnds/ For details on how to submit your log, please visit www.westlakesarc.org.au/contest.htm

Field Day Web Site

http://www.wia.org.au/members/contests/vhfuhf/

This site includes the rules for the next Field Day, rules and results of all past VHF-UHF Field Days, cover sheets and scoring tables, plus other information.

Spring VHF-UHF Field Day 2009

Contest manager John Martin VK3KM advises that ballots were taken on the VK-VHF email reflector and the VK Logger, to find the most popular date for the next Spring Field Day. The clear winner was the last weekend in November – Saturday and Sunday 28 and 29 November 2009. The rules will be published in the October issue of *AR*.

Scandinavian Activity Contest

Just in case conditions improve, then it is worth being in front of the radio for the Scandinavian Activity Contest. Now you never know, the band may open up. After all I did hear a couple of OH0 stations from Aland Island on 40 m and 20 m SSB during the IOTA contest – working them was a different story, grumble grumble.....

Apart from the more common Scandinavian countries like Norway, Finland, Denmark and Sweden, it is an opportunity to hunt the rarer entities like Svalbard Island, Jan Mayen Island, Aland Island, Market Reef, Greenland, Faeroe Island, and Iceland.

The CW section is from 1200 UTC September 19 to 1200 UTC September 20. The SSB section is on the following week from 1200 UTC September 26 to 1200 UTC September 27. Rules for non-Scandinavian countries are available at www.sk3bg.se/contest/sacnsc.htm

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RD Log
in
NOW

Winter VHF/UHF Field Day 2009 Results

Contest manager: John Martin VK3KM

This year's Winter Field Day saw less than usual activity – except in the home station section. Not a surprise, because the weather was cold, and so was the propagation.

The winner of Section A was Doug Friend VK4OE, and in Section B, Tim Dixon VK5ZT took the honours again. In the multi-operator sections, top scores went to the Elizabeth club VK5LZ, and to the VK3XPD team. In the home station section, the winner was Andrew Martin VK3OE. Congratulations to all, and I hope you will all thaw out soon.

The next event will be the Spring Field Day, to be held on the weekend of November 28 and 29.

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	TOTAL
Section A:	**Single Operator, 24 Hours**										
VK4OE	Doug Friend	QG62, QG63	87	417	530	724	450	-	-	210	2418
VK3DAG	Steven Hamer	QF32	82	498	560	384	-	-	-	-	1524
VK4ALH	Leicester Hibbert	QG63	21	309	255	392	210	-	-	210	1397
VK4CP	Adam Maurer	QG61	48	378	355	328	-	-	-	-	1109
VK4HEC	Ewen Cameron	QG52	48	390	410	-	-	-	-	-	848
VK2FABV	Colin Sibraa	QF36	-	441	225	-	-	-	-	-	666
VK3SI	Glenn Reynolds	QF31	41	228	265	-	-	-	-	-	534
VK2YJS	Julian Sortland	QF56	-	120	105	-	-	-	-	-	225
Section B:	**Single Operator, 8 Hours**										
VK5ZT	Tim Dixon	PF85, PF95, PF96	87	294	460	376	-	-	-	-	1217
VK3HY	Gavin Brain	QF32	74	267	330	488	-	-	-	-	1159
VK5AGZ	Derek Reuther	PF85, 86, 94, 95, 96	33	315	475	-	-	-	-	-	823
VK1DA	Andrew Davis	QF44	34	399	310	-	-	-	-	-	743
VK5AR	Alan Raftery	PF94, PF95	68	258	365	-	-	-	-	-	691
VK4ADC	Doug Hunter	QG61	48	294	225	-	-	-	-	-	567
VK2CU	Justin Lavery	QF59	-	252	105	168	-	-	-	-	525
VK1DSH	Dale Hughes	QF45	-	210	165	-	-	-	-	-	375
VK2JH	John Hams	QF58	-	141	170	-	-	-	-	-	311
Section C:	**Multi Operator, 24 Hours**										
VK5LZ	Elizabeth ARC (1)	PF95	77	324	475	368	-	-	-	-	1244
VK4WIE	CBRS (2)	QF53, QG62, QG63	-	555	395	168	-	-	-	-	1118
Section D:	**Multi Operator, 8 Hours**										
VK3XPD	(3)	QF21	41	345	485	448	320	-	-	210	1849
VK5LZ	Elizabeth ARC (1)	PF95	77	324	475	368	-	-	-	-	1244
VK3AWS	WANSARC (4)	QF22	45	186	175	240	-	-	-	-	646
VK2HZ	BMARC (5)	QF56	-	144	185	-	-	-	-	-	329
Section E:	**Home Station, 24 Hours**										
VK3OE	Andrew Martin	QF22	47	357	370	448	-	-	-	-	1222
VK3WT	Max Chadwick	QF22	-	285	310	528	-	-	-	-	1123
VK3VFO	Nick Kraehe	QF31	49	393	380	176	-	-	-	-	998
VK2XTT	Tim Tuck	QF56	-	438	285	-	-	-	-	-	723
VK5LBJ	Darryl Ross	PF95	43	240	395	-	-	-	-	-	678
VK4VDX	Roland Lang	QG62	-	366	295	-	-	-	-	-	661

(1) Elizabeth Amateur Radio Club: Keith Gooley VK5OQ, P. Roehrs VK5NE, I. Crawford VK5ZD, W. Anthony VK5AHV, S. Mahony VK5AIM, A. Hall VK5AKH.

(2) City of Brisbane Radio Society: R. Meiring VK4DD, J. Morris VK4MJF, R. Croucher VK4CRO

(3) A. Devlin VK3XPD, P. Roberts VK3TPR, M. Coleman VK3KH.

(4) Western and Northern Suburbs ARC: W. Bruce VK3VCL, V. Mong VK3DKM, J. Karr VK3FMPB.

(5) Blue Mountains ARC: Richard Neilsen VK2LET, Mark Bryan VK2FMJB, Tracey Bryan VK2FTBH, Felicity Austen VK2FACW, Andrew Vaughan VK2FACV **ar**

David Smith VK3HZ – vk3hz@wia.org.au

The Magic Band – 6 m DX

Brian Cleland VK5BC

July continued to be quiet with some further winter 'E' openings and Meteor scatter contacts maintaining some interest.

On the 1st July Kerry ZL2TPY reported hearing several beacons including FK8SIX, VK4RGG & VK2RHV whilst VK2HN also reported the FK8SIX beacon. Unfortunately there were not any contacts reported.

The best 'E' opening of the winter occurred on 8th July when the band was open for several hours with several contacts between VK1, 2, 3, 4 & 5. Signals were of good strength with Rob VK1ZQR making several contacts whilst mobile in Canberra. From VK5 the band was open from as far south as Norm VK3DUT in the Gippsland area to John VK4FNQ in Charters Towers and many contacts were completed up and down the eastern coast.

Brian VK4EK at Sapphire in mid north Queensland reported hearing both the FK8SIX and VK3RMH beacons on the 9th July. Brian reported the beacons again on the 10th this time though completing several contacts with VK1, 2, 3 & 5. On the same day Kevin VK4BKP in Mackay also completed several contacts into VK2, 3 & 5.

The 11th July was also a good day for winter 'E's with good contacts completed from VK4 to VK2 & 5. Kerry ZL2TPY worked several VK2s and reported the VK5RBV beacon. Late afternoon the band opened from VK7 to VK6 with Glenn VK7AB working Jack VK6KDX and Glen VK6IQ.

Again on the 12th July the band opened from VK4 to VK2, 3 & 5. This time David VK4ZDP in Innisfail worked several VK1 & 2 stations whilst Andrew VK4KAY in Mackay worked Brian VK5BC.

On the 15th July Brian VK5BC reported hearing the ZL3SIX beacon over a long period of time and Brad VK2QO reported the VK5RBV beacon but there were not any contacts completed.

The band was again lively down the eastern coast on the 17th July with several contacts completed to as far north as John VK4FNQ in Charters Towers and down as far south as Kevin VK3WN in Ballarat.

19th July saw the band open from ZL with contacts being made from VK2, 3, 4 & 7. Peter ZL4LY, Bob ZL3TY and Kerry ZL2TPY completed several contacts from Rockhampton to Hobart. The same day contacts were completed from VK4 to VK2 and 3. Again on the 20th the band opened from ZL to VK, this time Duncan ZL3JT worked Kevin VK3WN, Norm VK3DUT and John VK2BHO.

On the 23rd July the band opened from northern VK4 to VK2, 3 & 5 with Brian VK4EK completing several contacts whilst Brian VK5BC worked Tony VK2BTS in Grafton and Brian VK4DDC. The 24th was similar with Brian VK4EK completing contacts with Rob VK1ZQR and Dave VK1DJA and Brian VK5BC working Rod VK4CRO and Les VK4ALH.

Glenn VK7AB had a good day on the 26th July working several VK4s while Ron VK4DD and Phil VK4FIL worked Kevin VK3WN, Brian VK3BBB and Mike VK3ALZ.

Meanwhile early on many mornings meteor scatter contacts have been completed and Brad VK2QO reports:

July Meteor Scatter on 50.200 MHz

On the mornings of the 6th: John VK4ZJB 5/9. 10th: Brian VK4EK 5/2, John VK4ZJB 5/5. 11th: Scott VK4CZ 5/1.

18th: John VK4ZJB 529. 21st: Glenn VK7AB 5/1. 22nd: Brian VK5BC 5/1. 25th: Scott VK4CZ 559, 5/2 and 5/2 three contacts made over 1.5 hours and Brian VK5BC 5/2. 26th: Scott VK4CZ 519. 28th: Glenn VK7AB 529. 29th: Brian VK4EK 5/1.

30th: Phil VK4FIL 519.

Most mornings VK5RBV and VK4RGG are heard with pings, bursts and burns. On occasions VK7RST, VK7RAE were heard but the best was VK4RTL at 1927 Z on the 31/7/09 Z (1/8/09).

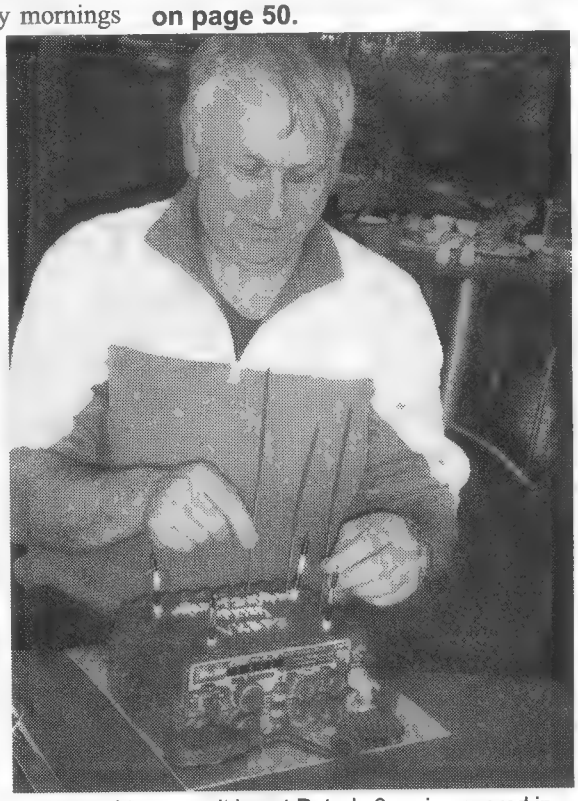
There have been lots of contacts made between VK4-VK3, VK7-VK5 and VK5-VK4. Next month should be better with the Perseids at a rate of 100 hits per hour around the 12th and 13th of August in the northeastern skies.

Peter VK6KXW and Gary VK4ABW regularly report being able to either hear TV carriers in the 49 MHz to 50 MHz area or see them on Spectran or similar programs from the northern hemisphere. Unfortunately no contacts have eventuated and we can only continue to wait for the next sunspot cycle to kick into action.

Peter VK5PJ celebrated his 50th birthday during the month and he is pictured below preparing to cut his cake which looked like a radio he once owned.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com

Balance of VHF/UHF column is on page 50.



No need to worry, it is not Peter's 6 m rig covered in icing but in fact is actually a cake.

AMSAT

David Giles VK5DG

Foundation Licensees and OSCARs

Responding to our Editor's call for articles geared towards the Foundation Licensees we have an article showing how Foundation Licensees CAN use most satellites. Also this month there is more news on the SuitSat-2 mission, four new satellites and some feedback from the 6-monthly satellite review.

Foundation Licensees

Not mentioned in the exam or the syllabus and not even a paragraph in the first edition of the Foundation Licence Manual, but Foundation Licensees can operate most of the satellites.

The Radiocommunications Licence Conditions (Amateur Licence) Determinations (LCD) schedule 3A [1], allow Foundation Licensees to transmit in the 10 m, 2 m and 70 cm bands using CW, SSB and FM. This gives them full access to transponders on AO-7, FO-29, SO-50, and VO-52 and also use of parts of AO-51 and some operations on the ISS.

Foundation Licensees can operate most of the satellites

Foundation Licensees cannot transmit to the digital satellites (e.g. GO-32, NO-44, and the digital sides of AO-51 and the ISS). Also 23 cm uplinks (such as AO-51 and CO-65) cannot be used nor the 13 cm mode-S transmitter on AO-51. This would contravene section 8A(3) of the LCD as the satellite would be re-broadcasting the operator's signal on a frequency not permitted for the operator. (See AMSAT column in the May 2009 issue of AR for what you are missing out on there).

More good news: the 10 watt transmitter power limitation is no problem. For Low Earth Orbit satellite operation, 10 watts (or less) into a small Yagi will put a good signal through any of the above satellites. As an example, SO-50 has a very sensitive receiver and has been used with transmit power levels down to 50 mW. Satellites have a very limited power supply and can easily be overloaded by strong uplink signals. Operators who transmit with too much power are known as alligators (big mouth, small ears) and it is poor operating practice.

The 10 watt limit may stop a Foundation Licensee from doing any harm to the satellite.

One exception where the 10 watt limit may be a struggle is using the repeater on board the International Space Station. It is not due to poor sensitivity of the ISS receiver but that there is plenty of competition from the other amateurs and only the loudest signal will get through. This is known as the FM capture effect and is a characteristic of FM reception.

There is plenty of information available on how to get started in using satellites. My predecessor Paul VK2TXT wrote an excellent article in the November 2008 issue of AR magazine, "Getting started on the FM birds". He describes what you need and how to operate through SO-50 and AO-51. A reprint is available for download from the AMSAT-VK website [2] under the files section. Some references to antennas (commercial and homebrew) and operating techniques are at the end of the article [3], [4], [5].

As well as these satellites, Foundation Licensees can listen to the other satellites. Some find pleasure in decoding telemetry and receiving SWL cards from the command stations.

Holders of the Standard licence can also now fully use all satellites currently in operation. The previous Novice licence was restricted to parts of 2 m and 70 cm not used by the amateur satellite service.

Good and bad news for SuitSat-2

I reported last month on the upcoming Suitsat-2 project from AMSAT-NA [6]. During July two major developments occurred.

At the integration meeting in Phoenix the transponder receiver and command receiver were tested with the rest of the hardware. The transponder was now operational and transmitting with the CW, FM and BPSK telemetry signals. At the Central States VHF Society conference in Chicago two weeks later, the functioning prototype was operational all weekend. Participants could receive the telemetry and live SSTV pictures from the 2 m transmitter.

The full package needs to be ready to go to the ISS on a cargo flight during January 2010. It is scheduled to be launched from the ISS in April 2010.

But it probably will not be dressed up in a spacesuit. Due to lack of storage space on the ISS, two Orlan spacesuits were sent back to Earth on a Progress Cargo Vessel, one of which was earmarked for the SuitSat project. Work is underway to quickly develop suitable hardware to hold all the electronics, batteries, solar panels, antennas and cameras. Without the 'suit' a new name will be given to the mission.

AMSAT's aim for SuitSat is to develop and fly a small, flexible, modular software defined transponder that can be used for future missions. ARISS's viewpoint for this mission is educational outreach. Students can listen to the recorded greetings, receive the pictures and learn about tracking spacecraft. The Russian Kursk State University is developing an experiment to be flown with SuitSat-2.

More new satellites

New satellites just keep coming. During July's Space Shuttle mission STS-127, four satellites were launched.

Dual RF Astrodynamic GPS Orbital Navigator Satellite (DRAGONSat) is made up of two cubesats. Designated as BEVO-1 and AggieSat-2, these 125 mm cubesats were launched together. Their mission is the first stage in developing a system where two satellites can be launched separately and perform an in-orbit rendezvous. DRAGONSat focuses on accurate positioning using a GPS designed for orbital operation. Your car GPS would have trouble working when moving at 27600 km/h.

BEVO-1 has a CW beacon at 437.325 MHz. AggieSat has a transmitter on 436.250 MHz using a proprietary 19k2 data modem. Any reports are welcome, even if they are just "signal heard". More details can be found at http://www.nasa.gov/mission_pages/station/science/experiments/DRAGONSat.html

The other mission also comprises two satellites. Atmospheric Neutral Density Experiment-2 (ANDE-2) uses two spherical satellites designated Castor and Pollux. Following on from the successful 2006 mission of ANDE-1 (NO-61 or OSCAR-61), ANDE-2 satellites will measure the density and composition of Earth's upper atmosphere between 400 km and 100 km.

This will give better predictions of objects as their orbits decay. Both are made of high precision aluminium spheres with a diameter of 0.48 m. They are powered by internal Lithium-Ion batteries. Castor is the heavier at 50 kg and is expected to orbit for a year. Pollux is only 25 kg and may last six months before burning up on re-entry.

Both transmit AX.25 packet telemetry on 145.825 MHz using 1200 baud AFSK at approximately 30 second intervals. A later experiment will use FX.25. FX.25 is a modified version of AX.25 which adds a Forward Error Correction wrapper around the AX.25 packet. No details have been published at this time of writing, but schematics and source code for a microcontroller project to decode FX.25 packets have been promised.

Castor is using the callsign KD4HBO-1; Pollux is using POLLUX-1. Initial reception reports from both satellites were posted on the AMSAT bulletin board. Castor has a weaker signal than Pollux, while Pollux is 1-2 kHz higher in frequency. Most of the telemetry posted has been from Pollux.

Anyone sending in telemetry may receive a QSL card. Those who get the most will receive other goodies. Websites for ANDE-2 are at:

http://www.nasa.gov/mission_pages/station/science/experiments/ANDE-2.html and

https://goby.nrl.navy.mil/ANDE/Participation.html

Dead satellites

I received feedback from the 6-monthly satellite report in July's column. A newcomer to satellites was setting up the popular tracking program Orbitron.

He had Orbitron download the latest Keplerian Elements files from http://celestrak.com/ and was surprised to see extra satellites in the amateur listing that I had not listed. Apart from one, these satellites are still in orbit but not operational. The exception is AO-27, popular with amateurs in the USA but omitted from my list as it has never been turned on over the southern hemisphere.

It may be possible for some of these satellites to come back to life as AO-7 did in 2002. Some amateurs occasionally try transponders on 'dead' satellites for signs of life. The designers of XO-53 (SSETI express) recently asked for amateurs to listen for its 9k6 digital/voice transmitter on 437.250 MHz when the satellite is in sunlight. XO-53 failed after only a few hours as a relay did not switch the solar panels over to charge the batteries. There was enough charge in the batteries for XO-53 to fulfil most of its mission.

Final Pass

It has been another busy month among the AMSAT fraternity. The AMSAT-UK International Space Colloquium held in Guildford was very successful. Available for download are slideshows from the presentations. They can be found at:

http://www.uk.amsat.org/component/option,com_wrapper/Itemid,278/

Many are thought provoking with details on some interesting future projects.

References

[1] http://www.wia.org.au/licences/foundation/documentation/

[2] http://au.groups.yahoo.com/group/amsatvk/

[3] personales.ya.com/ea4cax/paginaea4cyq/Antenaioio/ioioingles.pdf (ioio antenna)

[4] http://www.wa5vjb.com/downloads.html (cheap Yagi)

[5] http://www.amsat.org/amsat-new/echo/EchoHT.php

[6] http://www.amsat.org/amsat-new/index.php

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AMSAT-VK

AMSAT Co-ordinator
Paul Paradigm VK2TXT
email: coordinator@amsat-vk.org

Group Moderator
Judy Williams VK2TJU,
email: secretary@amsat-vk.org

Website:
www.amsat-vk.org

Group site:
group.amsat-vk.org

About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RMP
Maddens Plains repeater on 146.850 MHz
VK2RIS
Saddleback repeater on 146.975 MHz
VK2RBT
Mt Boyne Repeater on 146.675 MHz

In Victoria
VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In South Australia
VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz
IRLP node 6278, Echolink node 399996

In Tasmania
VK7AX, Ulverstone on 147.425 MHz

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

VHF/UHF – An Expanding World

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

Once again, there is not much to report regarding unusual VHF/UHF activity.

Of regular events, the local Net run by Mike VK3KH and Rob VK3MQ on 144.150 MHz at 2030 AEST each Wednesday is always well attended. The Scramble on 144.150 MHz held on the last Sunday of the month at 2030 AEST also draws quite a number of participants. In VK4, a Net is running on 144.3 MHz on Sundays at 1930 AEST.

The main regular activity is the daily Aircraft Enhanced Propagation (AEP) activity session from 0800 to 0900 AEST each morning on 144.2 MHz. So, it is perhaps not surprising that this month's column features a fair amount of AEP-related information.

AEP Tests

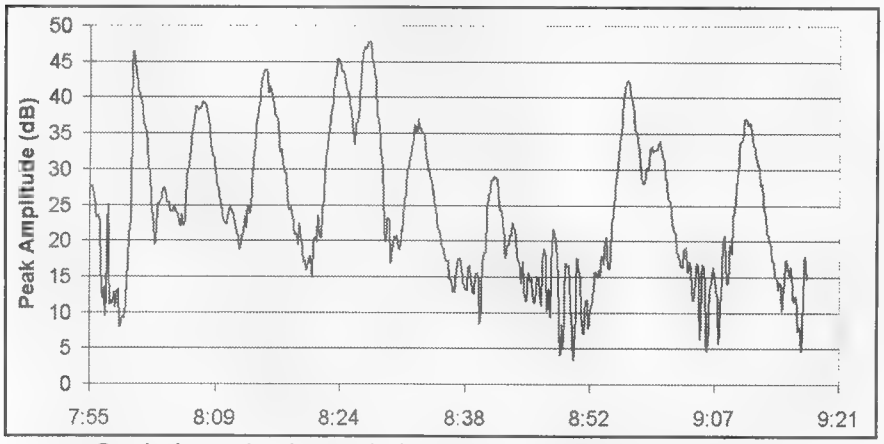
Of course, AEP only relies on aircraft and stations to be in the right places and so can be utilised throughout the year, regardless of weather. The proliferation of aircraft flying the Melbourne/Canberra /Sydney/Brisbane routes means that AEP can provide substantial lift for favourably located stations up the east coast.

Following GippsTech this year, Rex VK7MO travelled up into the VK1/2 area with his portable 2 m station, ADS-B aircraft receiver and numerous laptops. He stopped at several locations and, using signals from Jim VK3II and David VK3HZ, he recorded frequency, levels and aircraft positions. The GPS-locking on all the stations enabled very accurate logging of the troposcatter and doppler-shifted AEP components of the signals. While more tests and further analyses are to be done, the initial results provide evidence of the significant amount of signal lift that AEP can produce. The graph below shows signal strengths between Jim VK3II and Waldis VK1WJ – an almost ideal path for AEP using aircraft flying the busy Sydney to Melbourne route.

At one stage, Rex parked his station in the town of Batlow in southern NSW. Batlow is surrounded by hills and is far from an ideal VHF location. However, the Melbourne to Sydney flight path goes directly overhead. Rex reported hearing nothing of my 20-watt signal via normal troposcatter. However, when an aircraft appeared overhead, the signal peaked to 50+ dB above the noise.

What this means is that if you live in an RF "hole" (as I did in my early years in amateur radio), do not give up on VHF operation. If you can "see" (in an RF sense) aircraft flying past (even quite distant), then it is quite possible that you will be able to use AEP to contact others. The ideal situation is where an aircraft crosses the path between you and the other station, is RF-visible to both stations and is close to the mid-point. AEP also works to a lesser extent for reflections off aircraft in any direction.

At risk of beating my own drum, I would suggest that anyone interested in analysing their prospects for AEP should have a look at the Radio Site Display - information on www.vk3hz.net - and particularly the use of PlanePlotter.



Graph shows signal strengths between Jim VK3II and Waldis VK1WJ

VK3AUU Mobile

Continuing on with the AEP theme, David VK3AUU recently operated portable/mobile on 2 m from central NSW. He was using only 50 watts from an IC-706 into a halo antenna, so some assistance was required to work him from southern VK3. This assistance was in the form of AEP. Barry VK3BJM takes up the story:

Tuesday 28/7/09

David VK3AUU was operating portable (well, stationary mobile, perhaps) from near Neckarboo Station in Central NSW (QF27hw) - about 100 km NNE of Ivanhoe. He operated from a small rise near the homestead.

I was late home from work, and did not switch the radio on until 1055 Z. I heard Rob VK3XQ, Jim VK3II and Michael VK3KH on 144.1 MHz, but there was no sign of David. Jim made mention that David was also liaising on 3695 kHz, so I shot over there - whilst tuning up the quad, I was also firing up the SBS-1 ADS-B "Radar" receiver. The SBS-1 came online before the quad, and the first thing I saw was a QANTAS flight, QF566, from Adelaide to Sydney, at 41,000'. It was nearing the Vic/NSW border, just NW of Swan Hill. I joined Jim and David on 80 m, just as David was suggesting he was about to shut down for the evening. I told them of the flight and David agreed to hang in there a little longer

At about 1124z, the receiver suggested the aircraft had crossed over the heading from my QTH to David (2 degrees). Jim, Michael and I had been calling regularly. Finally, at 1126 Z I heard David and called him. He gave me a 52, and I gave him a 41. As would be expected, due to the aircraft cutting across the path at nearly 90 degrees, the period of enhancement was very brief. David later advised he also heard Michael and Jim, but David's signal was too weak to be readable in lower VK3 – it is a long haul for 50 watts and a halo... David is about 574 km from my QTH and it would be another 100 km, and a good deal more of the Great Divide, to work over for those in Melbourne and environs.

David advised before shutting down that he would be back on for the usual AE "net" window Wednesday morning (2200-2300z), as well as Wednesday night.

Wednesday 29/7/09

I was in my shack on time this time and David was again on air on 144.1 MHz, liaison on 3.695 MHz, between 1000 Z and about 1110 Z. Jim VK3II and Michael VK3KH were again both on and Steve VK2ZT was looking Neckarboo-way. Leigh VK2KRR also popped up just after 1030 Z.

There were a number of aircraft criss-crossing the path during the hour, but this only aided in increasing the number of near-misses rather than contacts, it seems. David made quite a list of moments where he heard Jim, Michael and myself. The ADS-B receiver showed that we had just missed QF582 (Per>Syd), but that QF774 (Ade>Syd) was about 10 minutes from being in position. I also had LOS with JST452 (Ade>Bris), despite it crossing the path 3/4 of the way to David – 445 km from me, and about 129 km from David. It was at 37000', and I figured that if I could get the 1090 MHz signal from the aircraft, I may as well give it a blast on 2 m... It caused some lift, but not a lot - this was at 1028 Z. Just before that, QF719 (Can>Per) had passed over heading west. In what was an interesting sight on the SBS-1 screen, QF774 (at 39000') passed directly over QF719 (at 36000') - a mere 3000' separation!

Next up we had the pair of QF583 (Syd>Per) and VOZ569 (Syd>Per). QF583 provided lift for a comfortable contact between Leigh VK2KRR and David at 1039 Z. By 1052 Z it was in position to provide me with lift, with a 41 given to David and a 52 received from him. At 1059 Z the Virgin flight brought David up again, this time only to 31. VOZ569 was cruising at 36000', whereas QF583 was at 39975'...

Afterwards, on 80 m, David suggested he would be returning to Neckarboo another time, and next time he would pack a Yagi - maybe 10-el. His location was about the same distance from Sydney and Adelaide/the Barossa as it is from Melbourne - around or less than 700 km.

Thursday 30/7/09

At 1000 Z, David appeared on 3.695 MHz advising that he was now about 15 km south of Mount Hope in QF27wa. This put him about 490 km from my QTH, and 607 km from Jim VK3II. Steve VK2ZT also popped up on 80 m to advise he was looking David's way.

At 1028 Z, QF583 (Syd>Perth) crossed my beam heading, 340 km from me and cruising at 38000'. Again, this aircraft was located 2/3 of the way to David, but still with direct LOS to my QTH. Reports of 51 and 52 were exchanged. Jim VK3II also worked David – a new grid locator for him.

David then agreed to trundle about a kilometre south of the railway line, putting him into QF26. By this time, we had been joined on air on 2 m by Michael VK3KH, and Phil VK5AKK had made it known via the Logger that he was listening for David.

A few more aircraft started to appear. At 1101 Z, Virgin flight VOZ569 (Syd>Per) crossed over at the same spot and altitude as the earlier QF583; David and I managed an exchange of 41 both ways. By this time, however, it was too far west for Jim or Michael, and I suspect it was too far north to be visible to them. However, at 1122 Z, QF566 (Ade>Syd) was located well enough to enable Jim to work David with a report of 41. The aircraft was probably about 410 km from Jim, at 41000'. Michael was heard by David, but was unable to complete.

The most interesting observation I made was that, for the combination of halo at David's end and Yagi at my end, contacts were more easily afforded when the aircraft was located 2/3 to 3/4 of the way from our location to David's location - rather than the path mid-point. We still had visibility of the aircraft - but perhaps the elevation pattern of the Halo meant David "saw" the closer aircraft better than those closer to the horizon.

New stations on 13 cm

The number of stations now active on 2403 MHz is increasing almost by the month, which should provide some lively activity for the upcoming VHF/UHF Field Day contest. Peter VK3TPR is one of the newest additions and writes:

Today (25/6), I made my first contacts using my own 13 cm equipment - a Minikits transverter that I recently built, a 600 mm x 900 mm Wi-Fi grid pack dish and a Yaesu FT-897D for a 147 MHz IF.

To ensure a good chance of making my first contacts, I chose a line of sight path from Arthurs Seat (QF21lp) to Alan VK3XPD's QTH about 70 km away and mostly over water. As luck would have it, the QTH of Michael VK3KH is almost directly in this path and a little less than halfway to Alan's QTH.

After setting up on one of the lower lookouts on Arthurs Seat (best to keep away from the tourists at the Peak Cafe) with both 13 cm and 23 cm transverters, I tuned to both of Alan's VK3RXX beacons on 1296.530 and 2403.530 and was getting about S3 to S5 signals. Looking good so far...

I then tuned to 2403.1 only to find the frequency in use ... but it was only Alan talking to Michael. Alan was 5/9+20 and Michael was about 5/1 off the back of his dish.

I quickly got into the conversation and received 5/9 reports from both Alan and Michael, although I think Mike was beaming at his neighbour's iron roof by this time - whatever works best, eh? Output at my end is only 50 mW into a claimed 24 dBi antenna.

Very satisfying indeed to make these contacts so easily today and makes me happy with the investment in the transverters.

On 23 cm, I received 5/9 plus plus reports using a 24-element Yagi and 15 watts. Antennas were only about 2-3 metres above the ground although the Lookout is a cool 247 m above Port Philip Bay. Alan's signal to me on both 13 and 23 was 5/9 plus, plus, plus.

Column Online

I have been writing and collating this column for over six years now – how time flies etc. With the able assistance of Leigh VK2KRR, Rex VK7MO and Brian VK5BC, I hope that we've provided an interesting spread of information in the area of VHF/UHF operations.

I have put all the old columns up on the web site: www.vk3hz.net/vhf_column

These are the raw files – the content and pictures (in colour) are the same as you see in the magazine but the layout is not as flash.

Finally, I would like to once again appeal for input to the column. Anything you are doing regarding building, operating, experimenting, researching … in the VHF / UHF / microwave area – I would like to hear about it and pass on the information to others.

Please send Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

The Magic Band – 6 m DX is on page 47 this month.

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DX - NEWS & VIEWS.

John Bazley VK4OQ,
E-Mail: john.bazley@bigpond.com

I am sure the majority of readers are aware of the various DX clusters that are now available for tracking DX and associated information.

The Finnish cluster was one of the early ones to start operating and has been widely used in many countries. The WIA recently received the following news item outlining the new developments of their site.

DX Summit soon ready for 2-way communication with over 110,000 monthly users

The Radio Arcala DX Summit portal is celebrating the milestone of one million monthly hits over a course of several months and more than 110,000 people spending an average of 35 minutes on the site daily. The top five nations using the service are as follows:

USA (28.5%), followed by Germany, United Kingdom, Italy and Japan. In total, users from 170 DXCC countries have entered the service portal. With new visits approaching 19% during the month of May, an increase of users is quite evident.

In the process of making the DX Summit service more focused on younger user segments and non-amateur radio population, two features have been added recently.

Each spotting and spotted callsign is automatically linked to QRZ.COM, providing a more human link to the personal profiles of people and to their pictures. Just click the callsign and you will automatically enter the relevant QRZ.COM page. Additionally, each line carries the name of the DXCC country spotted.

In a few months time, custom selected filters will be provided to the public allowing users to select personalized spots that they would like to receive. While initially the selected spots will be sent to your personal email address, the ultimate aim is to offer an SMS (short message service) option to DX Summit users.

This service is a non-profit exercise for Radio Arcala OH8X but we are pleased to recognize Yasme Foundation and Nokia Corporation for their support of further development and defrayment of operating expenses of the portal. As the servers are in the hands of a professional service provider in the United States, some interruptions are recorded and changing the service provider is in process.

Also, a Help Desk for regular users and for software developers is being set up. Here it is suggested that DX Summit open a channel for accepting voluntary donations to keep the Help Desk operational. On a trial basis, DX Summit accepts donations through PayPal. Following a donation of 10 USD or 10 EUR, Radio Arcala will send you a full-colour Radio Arcala wall calendar post-paid. This option is valid only for the months of July and August. www.dxsummit.fi/donate.aspx

In spite of the Solar Flux Index still persisting to hover between 68 and 72, it is quite remarkable how much excellent DX continues to be worked, primarily on the LF bands but with 14 MHz continuing to carry quite a load.

So what have we in store in the coming month?

From an official press release we learn that the **Gloriosos Island** DXpedition is postponed yet again because of flight problems. We think, however, the DXpedition could now begin at the end of August. The runway on Grande Glorieuse suffers with problems of stability that have to be remedied quickly to allow jumbo planes to land again safely.

This postponement will allow the DXpedition to include the following new operators, David F8CRS and Bernard F5LPY. A total of seven operators will now be going to FT5G.

Two stations will be active 24 hours a day and a third will continuously monitor 6 metres. This latter station will be used as a back up on HF if propagation opens on the lower bands.

The length of the stay is still scheduled for three weeks.

John W5JON will again be operating from the hilltop QTH overlooking the Caribbean Sea, and **Marigot Bay, St. Lucia**. He will be QRV as J68JA from 20th to 30th October, including an SOAB effort in the CQ WW SSB DX Contest. Activity will be on 1.8 MHz through to 50 MHz, including 5 MHz. He will have an IC-7000 and 350 watt amplifier. For antennas John will be using an Alpha Delta DX-LB and DX-EE Dipoles, and a 3-element Yagi for 6 metres. QSL via W5JON.

The expedition to **Sable Island (NA-063)** is now scheduled to take place on 19th to 26th October. Look for N0TG/CY0, WA4DAN/CY0 and AA4VK/CY0 who will be active on 160 to 10 metres CW, SSB and RTTY with three stations (one station for the CQ WW DX SSB Contest). QSL for all callsigns via N0TG. The website for the expedition is at http://www.cy0dxpedition.com/ Plans are going fine, but the date has changed a little. The charter aircraft has been booked for October 19th through to the 26th. A Battle Creek Special antenna has been acquired and the operators are hoping to work many "Topbanders".

Seb F8IJV is heading to **Senegal** for his honeymoon. He will be at the 6W7RV QTH in La Somone from 17th October to 1st November, including the CQ World Wide SSB DX Contest. During the contest he will most likely be SOAB running low power and non-assisted. Look for him before and after the contest on 1.8 through 6 metres mostly on SSB with some RTTY and PSK. 6V7Q is the callsign that Seb has been issued by the Senegalese Telecom authority. This will not be a 24/7 DXpedition as he has other activities planned. QSL via F8IJV either direct or via the REF QSL bureau.

Willi DJ7RJ has received the call

TO7RJ to be used from **Mayotte (AF-027)** from 22nd September through to 21st October. He will be leaving the island on 25th October, so he will be active as FH/DJ7RJ during the last few days. Expect Willi to operate CW and SSB on 160 to 10 metres, and perhaps 6 metres. QSL via home call.

Tim M0TDG and Martin G3ZAY plan to be active from **Miquelon (NA-032)** as FP/home call from 24th to 27th September. They will operate CW and SSB. Low band operation will depend on equipment availability (and airline baggage limits). QSL via home calls. Martin will also try to activate **McNutt's Island (VE1, NA-126)** on 29th September.

G3BJ and G4JKS will be operating from **FO Austral Islands** using a K3 and an HF/6 antenna from September 4th to September 14th. Then from ZK2, commencing on 18th September to 25th September. Both operations will be active on 80 m through to 10 m except 17 m and 12 m.

PA8AD, PA3AN, PA3AWW and PD0CAV will be active as TY1MS from **Grand Popo, Benin** from 10th to 27th October, including an entry in the CQ WW DX SSB Contest. Their goals are to activate this DXCC Entity on 160 to 10 metres, to provide on site help and raise funds for the Mercy Ships Charity Project. QSL via PA3AWW, direct or via the bureau. Further information can be found at http://www.benin2009.com I am sure some readers will remember the 2007 radio DXpedition where the DAGOE Foundation (Dutch Amateurs Going on Expedition) activated **Liberia** with the call 5L2MS to also support Mercy Ships.

Andy G7COD is planning to go back to the **Maldives (AS-013)** in October. He will be QRV as 8Q7CQ from Embudu Island from 12th to 25th October. Andy will be using an IC-7000 running 100 watts into a "Carolina Windom CWS 160 Special antenna" hanging from a tree and an Inverted Vee Dipole for 20 metres. Activity will be on 3.5 through 24 MHz on SSB and CW.

Bill Vanderheide N7OU has announced his plans to go back to the South Pacific. This time for a solo DXpedition to **Chatham Island** and then **Rarotonga, South Cook**. He will be QRV as ZL7/N7OU from 18th to 30th September on 3.5 through 28 MHz CW only running 100 watts and a vertical. Next he will be operating as E51NOU between October 5th and 30th. From Rarotonga he will be QRV in his spare time. QSL both operations via his home call N7OU.

DK9KX will be joined by DJ7JC, DJ8NK, DJ9ON, DJ9RR, DL6JGN and PA3EWP on **Conway Reef, 3D2/C**, for an operation from 3rd to 10th October. They will be on SSB, CW, RTTY and PSK, 160-6M. QSL via DJ8NK direct or bureau. This operation is 20 years after the first activation of Conway Reef, which DK9KX also led, with the 3D2CR callsign. Conway is IOTA OC-112. This year's crew will be based on the group that activated Chesterfield Island a few years ago. The operators say new IRCs are okay. **Remember**: 'old style IRCs' with an expiration date of December 31, 2009 are not acceptable as the QSL cards will not, in all probability, go out until January, 2010. The call will be announced closer to the starting date. The web page, www.conwayreef2009.de will be available soon.

VK9LA QSLs: *"After much haggling with the Australian Customs Department, we have finally received the QSL cards from Czech Republic"*, says Bill Horner VK4FW. He had planned to have all direct QSLing done by the end of June, but this is no longer possible. On 2nd July Bill left home for a two-month family holiday. He processed and mailed as many cards as he could before leaving, so "*many of you will receive your cards within a few days, but there will be also many that will not*". Please be patient.

The callsign that Al CT1GPQ will be using in **East Timor** between August 7th and October 3rd will be 4W6AL. Activity is expected to be on 7, 10, 14 and 18 MHz mostly CW with some SSB and RTTY. Al will have an IC-706MKIIG using a dipole on 40 and 30 metres and square loops on 20 and 17 metres. Toze CT1GFK will be the QSL manager and pilot station for this operation. You can reach Toze at star@algarvedx.com Logs will be updated daily at http://algarvedx.com Al will be in Dili working with a medical team, so radio activities will take place in his spare time.

And finally: **K4M - Midway Island Press Release # 5** by Tom Harrell N4XP and Dave Johnson WB4JTT.

"The K4M team has passed a very important milestone with the shipment this week (July 23rd) of radios, linears, antennas (20 of them), radios (6), computers and interfaces, thousands of feet of coax and stubs, and various connectors, switches, watt meters, and all the supplies you would expect from an operation on a remote Island. The gear will be stored in Hawaii until the supply ship leaves in three weeks to Midway.

Our charter flight to the Island is confirmed. The team is assembled. Fundraising continues on our website, www.midway2009.com If you have not visited it in a while stop by and help support our effort. All pre-expedition contributors who are on LOTW will receive their confirmations within a week of the end of the DXpedition.

This month we are highlighting three more team members. You can read all their history at www.midway2009.com/meettheops4.html."

Good luck in the pile-ups until next month.

Special thanks to the authors of The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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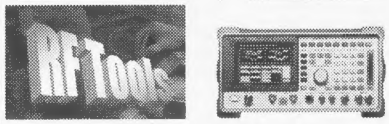

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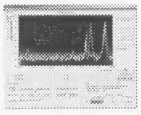

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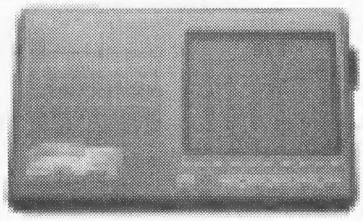

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Owen Holmwood VK2AEJ
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Victoria
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South Australia
Email vk5advisory@wia.org.au
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Peter Reichelt VK5APR
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Graham Holman VK5GH

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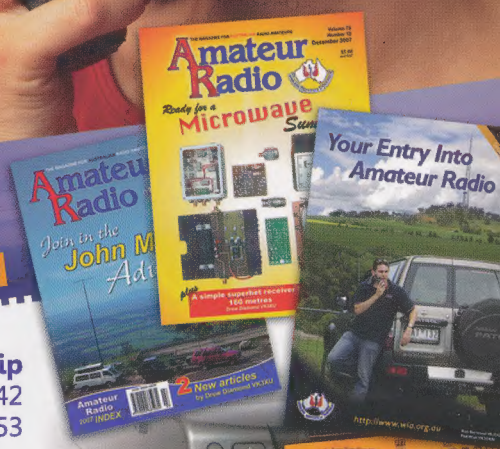

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